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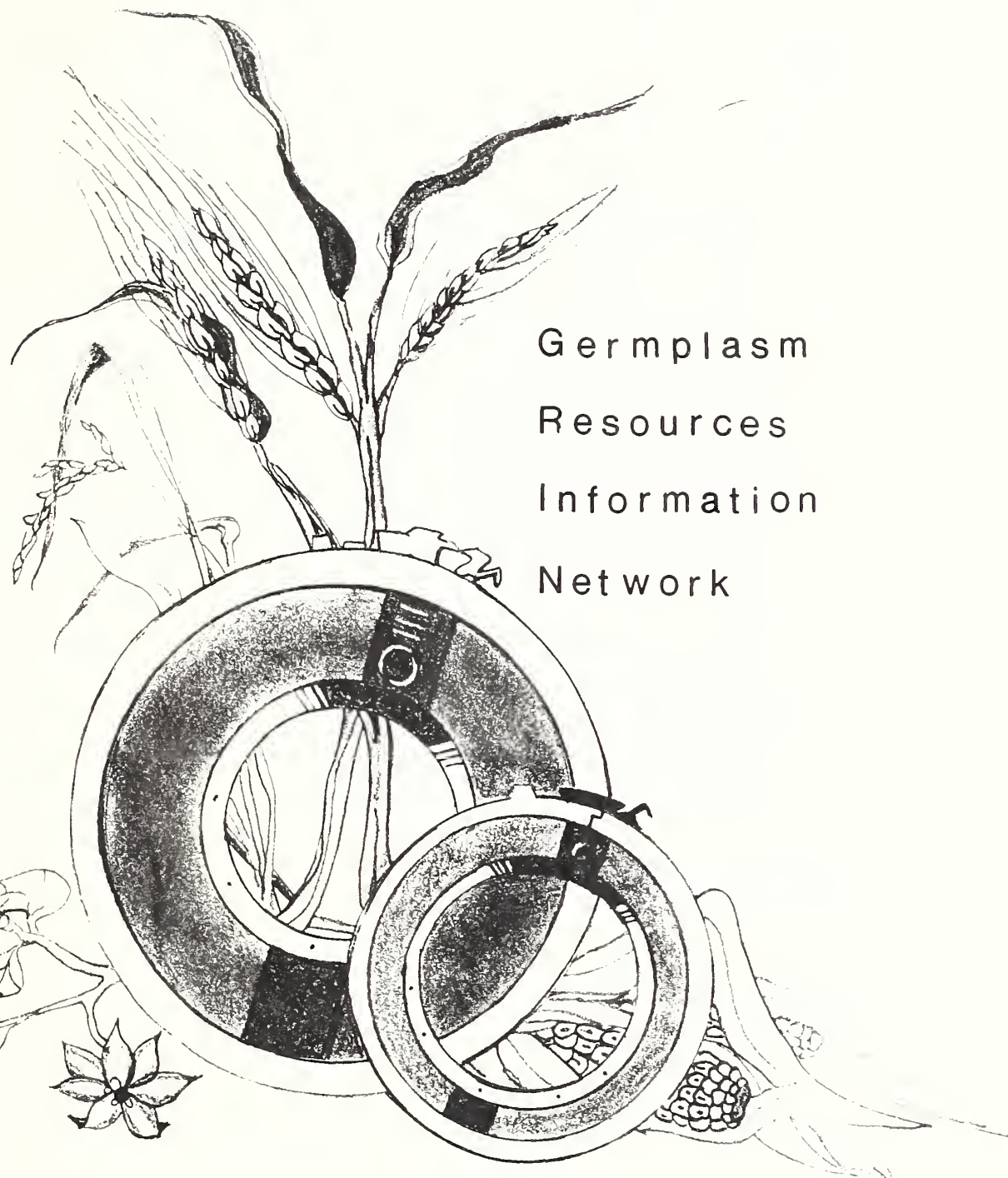
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Germplasm
Resources
Information
Network

PUBLIC USER MANUAL

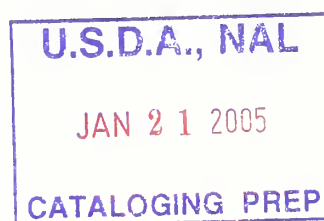
**United States
Department of
Agriculture**



National Agricultural Library

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT GENETICS AND GERMPLASM INSTITUTE

A MANUAL FOR PUBLIC USERS OF
THE GERMPLASM RESOURCES INFORMATION NETWORK
THE GRIN DATABANK



MARCH 1985
VERSION 2.2

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SECTION I

INTRODUCTION

Have you been looking for a plant with special genetic characteristics? You know it exists. Someone has it. In fact, you read an article once--somewhere--that described it exactly, but that was several years ago. You need that article now, but you didn't file it away.

It's possible that GRIN can help you.

Through the GRIN databank you can be in touch with other plant researchers and breeders throughout the world. You have the opportunity to find out who has what plant materials and how to get samples of them.

GRIN provides several advantages over printed sources. First, the GRIN databank contains the most current information available and is updated frequently as new information is provided. Second, once a researcher has experience with the GRIN system, he or she has an efficient way to quickly locate specific information and process it into a variety of usable formats. Finally, GRIN provides opportunities for the rapid exchange of plant materials, as well as information, among researchers and breeders with common interests.

As with any other reference source, using GRIN requires learning certain procedures. The purpose of this manual is to introduce interested researchers to the present GRIN system, explain its capabilities and limitations, and provide procedures and tutorial examples for using GRIN--as painlessly as possible.

The GRIN system is still in its infancy. As it evolves, the current methods for retrieving information will be simplified and additional procedures for selecting specific kinds of data will be developed and added to the system.

This manual represents only a starting point. It will be updated and replaced in about a year. For the present, we hope that our users will be patient with the many less than perfect features of the current system and feel encouraged by its potential.

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Although this manual describes how to use the GRIN system, it can deal only superficially with problems associated with the researcher's own computer. Those who have never used or rarely use a computer should refer to the manuals for their own computer system along with the tutorial and reference information supplied here.

If all else fails, GRIN public users should seek help from experienced friends, their computer dealers, or the data systems support personnel in their own offices. Those who are already familiar with their own systems should have few problems retrieving basic information from GRIN with the help of this manual.

Some procedures are available now for conducting complex searches; however, they require reasonable familiarity with computer and database systems. These procedures are described in the DBMS/QUERY REFERENCE GUIDE and the INFO PRIMER. Both reference manuals are available through the GRIN Database Manager.

Who May Use the GRIN Databank ? Getting an Access Code (Password)

The GRIN databank may be used without fees or charges by any plant scientist, breeder, or research organization who shows reasonable need and has a computer terminal with telephone communication capability. An access code (password) will be assigned by the Database Manager upon receiving a written request showing reasonable need. Access codes may be obtained by writing to the Database Manager:

The Database Manager
GRIN DataBase Management Unit (DBMU)
USDA/ARS/PGGI
Bldg. 001, Rm. 130 BARC-West
Beltsville, Maryland 20705
<FTS/(301)> 344-3318 or 344-2646

The above information is also printed in the greeting message when you log into the GRIN system.

Background and Available Information

The Germplasm Resources Information Network, the GRIN system is a centralized national repository for information about plant germplasm that has been introduced, developed, maintained, evaluated, and distributed by members of the National Plant Germplasm System (NPGS).

Most of the germplasm "accessions" (samples) represented in the system are international in origin. They have been collected by NPGS exploration expeditions or donated by foreign cooperators over the years. Many are "primitive" samples of wild plant materials collected in their native habitats. These primitive samples provide the basic genetic stocks (gene banks) for plant breeders and researchers throughout the world.

New species of plants are discovered every year. The constant introduction of new germplasm is an asset to researchers attempting to isolate, identify, and use characteristics such as resistance to environmental toxins, insects, and disease.

Unfortunately, many new species are endangered or already extinct due to population expansions into primitive areas. Plant scientists around the world recognize this threat and are actively involved in collection expeditions designed to capture as many wild varieties as possible before their benefits are lost forever.

GRIN, as a centralized resource, provides a method for identifying those species already collected and available to plant scientists, as well as those not currently present in NPGS collections.

New accessions, from international sources, are shipped to the Plant Introduction Office (PIO) in Beltsville, Maryland. Here they are quarantined to assure that they are free of disease. Once an international accession is certified healthy, the PIO assigns an identifier to it called a Plant Inventory number (PI), and it is shipped to one of several RPIS for long term maintenance.

Among the RPIS are the following: Western Regional Plant Introduction Station in Pullman, Washington (W-6); North Central Regional Plant Introduction Station in Ames, Iowa (NC-7); Northeast Regional Plant Introduction Station in Geneva, New York (NE-9) and the Southern Regional Plant Introduction Station in Experiment, Georgia (S-9).

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Almost all of the accessions represented in the GRIN system are identified by PI numbers. For the purposes of special query programs, this identifier is called ACC-PRIMARY-IDENTIFIER in GRIN Cobol subschemas and ACID1 in GRIN Fortran subschemas.

Some accessions are of local origin and may have entered the GRIN system through one of the Regional Plant Introduction Stations (RPIS). These accessions may carry only local identifiers like Ames 1509 or CI3 50122.

The Regional Plant Introduction Stations (RPIS) maintain viable working collections of germplasm accessions and serve as distribution points for requests from researchers. Collectively, the maintenance sites are referred to as "supply sites" and may be found in the data element(s) ACC-PRIMARY-SUPPLY-SITE (Cobol) and ACSS1 (Fortran).

The National Seed Storage Laboratory (NSSL) in Fort Collins, Colorado is a facility for long term storage of accessions. NSSL maintains a sample of all accessions in the National Plant Germplasm System (NPGS). Periodically NSSL runs germination tests and schedules regrowth to guarantee that the accessions stored there remain viable. NSSL does not serve as a distribution point, but rather serves to assure long term availability of germplasm.

Accessions are evaluated for certain characteristics as specified by the Crop Advisory Committee (CAC) for that crop. Standard descriptors and measurement techniques have been defined for most major crops, and the conversion of "old" data to these new standards is ongoing.

Information about each entry into the GRIN system is organized within three major classifications: **Accession Data**, **Observation Data**, and **Inventory Data**.

Accession Data, sometimes referred to as **passport data**, includes the basic information that accompanies the plant material at the time it first "passes" into the National Plant Germplasm system. Accession data rarely changes once it has been entered into the system. It provides a kind of historical record of the sample.

Accession Data also provides general information which is useful to a researcher or breeder in identifying and locating the specific genetic material appropriate for his or her project. Accession data includes the following categories:

- * appropriate plant identification numbers and designations of the supply sites where the material is available;
- * life form (annual, spreading shrub, vine, etc.) and the form in which it was received (seed, tuber, plant, root, cell suspension, etc.);
- * botanical taxonomic classifications (genus, species, family, non-scientific names, etc.);
- * countries of origin (native habitat where seed is produced or collected) and of acquisition ("donating" or intermediary country, the collector's home base);
- * name of the original collector;
- * crop category (cereal, forage, fiber, vegetable, ornamental, etc.) and pedigree (identification of and information about its parentage);
- * general references to any reported attributes (susceptibility or resistance to environmental stresses or conditions);
- * all relevant cautions, approvals, and dates.

The following record is an example of how accession information is usually presented.

GRIN Accession Record Review

PI 478323 Supply Site: W-6
Taxon: Brassica chinensis
Sub-species:
Variety:
Cultivar:
Comn name:
Acquisition ctry: China, Peoples Repub of
Origin ctry: China, Peoples Repub of
Date rec'd: 8305 Date released:
Date entered: JUN 6, 1984 Entered by: jansen
Date PI assigned: Date taxon assigned:
PIO approved: YES Attributes: NO Donor/Collector flag: YES
PIO crop category: VEGETABLE PIO life form: UNKNOWN
PIO form received: SEED PIO Improvement status: CULTIVATED

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Information pertaining to primary accession records, like this one, is available through one of the ACC programs in the **DATA** option of the main **GRIN FUNCTIONS** menu. Information about retrieving accession records is explained in the **DATA SELECTIONS** sections of this manual (Page V-3).

The information provided in the primary accession record is also available through selective searches. A list of the identification numbers for all plants which have certain characteristics reported on the accession record may be compiled. For example, you may compile a list of identification numbers for all Brassica acquired in Turkey. See **ACC, option A5, Page V-8**.

Observation Data, also called **evaluation data**, categorizes information about the growth characteristics, the disease and insect resistance or susceptibility, and other information about each crop grown from the genetic plant material identified by a particular identification number.

Plant material identified by one identification number may include several observation records, each of which describes growth characteristics under a variety of conditions. Each sample crop is evaluated independently, and the results are recorded in separate datasets.

The information in these records is available as individual items or as a unit in selective searches. Usually at least one observation record is provided when the plant material first enters the GRIN databank; however, in some cases there is no initial observation record or it is incomplete.

Observations of growth characteristics are recorded in a series of categories called **Descriptors**. These include such information as plant height, leaf size, petiole length, days to maturity, flower color, stem length, reactions to pathogens, etc.

Descriptor Categories are established as needed to describe a particular group of plants. Comparing two crops, Beans and Brassica (field mustards), for example, we find variation in the categories evaluated; for example, leaf size is described for both, while petiole length is described only for beans.

The same Genus held by two different collection sites may also have variations in the categories evaluated; for example, Brassica plants held by the Ames, Iowa, collection site, mostly field mustards, are evaluated quite differently from the Brassica held by the site at Geneva, New York, mostly broccoli and cauliflower.

The method used for assigning values to each category varies as well. For example, the leaf size for beans is described in six objectively defined classifications of their measurements, while in contrast, the leaf size for broccoli is first categorized in two separate ways (maximum and minimum leaf size), and then both are evaluated on a continuous scale from 1 to 9.

Each category is classified through measurements based on the judgement of an experienced collector or evaluator. Information about the number and types of evaluation categories and the manner in which they are evaluated may be found in the **Catalog of the GRIN System (COGS)**.

The following excerpts from the Data Descriptor Lists describing leaf size for Beans and Brassica illustrate the method:

=====

W-6 Bean Characteristic Data Descriptor List

=====

Descriptor	Definition	Possible Values
LEAF-SIZ	Leaf size:	1 = less than 1 inches (2.5 cm) 2 = 1.25 - 2 inches (3 - 5 cm) 3 = 2.25 - 3 inches (5.5 - 8 cm) 4 = 3.25 - 4 inches (10 cm) 5 = more than 4 in (10 cm) 6 = variable

=====

NC-7 Brassica Characteristic Data Descriptor List

=====

Descriptor	Definition	Possible values
LEAF-SZ2	Maximum leaf size (1 - 9 where):	1 = Small 9 = Large
LEAF-SZ1	Minimum leaf size (1 - 9 where):	1 = Small 9 = Large

=====

It is important to note the definition and possible values for each individual category. Variations in names, definitions, and methods of measurement may occur even among categories that sound as if they should be treated similarly. In this case, differences reflect variations in the criteria established by maintenance sites as well as basic differences between the two crops.

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Descriptor categories may lack information. The information provided in each observation record is the result of a particular evaluation. Not every evaluation is carried out for all categories. Categories not evaluated are either left vacant or filled with a 0. This is an important point to keep in mind because it could affect the methodology used for a particular search.

Some categories important to a particular researcher may not be currently available in the GRIN system. New categories will be added to classify new kinds of information as available to the GRIN Database Management Unit (DBMU) team. As new observations are made of the characteristics of a plant material already in the system, separate observation records are added to the existing information.

All observations records for a particular plant material will be classified in association with the appropriate plant identification number. The opportunity to explore all observations associated with a particular identification number is available and will be explained later in Case Study 4 in the **TUTORIAL** section of this manual (Page III-47).

In summary, access to the observation data is available through various options found in the Database selections menu (**DATA**). Access to information about descriptor categories and their codes is available through both the Catalog of the GRIN System (**COGS**) and through the **DST** option of **DATA**.

Inventory data is created and maintained with frequent updates by the regional curators of the various storage sites. Although this data is part of the GRIN system, it is not currently available to public users except by personally telephoning or writing to the curator of the site where the plant material is stored.

Inventory data includes the following: locally assigned identifiers; availability for distribution; quantity on hand; hundred seed weight; critical distribution; replenishment and germination levels; germination history and maintenance techniques.

GRIN provides ways for researchers or breeders to solve a variety of problems. Some information may be obtained through simple programs developed for specific purposes; other information requires more effort on the part of the user. As the GRIN system evolves, additional programs will be added as the DBMU team better understands the particular needs of GRIN users.

For the present, solutions for what we believe are some typical research problems will be provided in the TUTORIAL section of this manual. Below is a brief description of research problems which will be explored.

Case Study 1: A researcher wants to find out what kind of information GRIN can provide about a particular crop: the number of separate genetic plant materials available for research; where they are located; how they have been evaluated. See TUTORIAL, Case Study 1 (Page III:2) and COGS (Section VI).

Case Study 2: A researcher wants to find out how many plants from a particular crop have been evaluated for a specific characteristic and to select plants based on one or two simple characteristics. TUTORIAL, Problems 2a, 2b, and 2c (III:13-33).

Case Study 3: A researcher wants to compile a list of identification numbers for plants which meet certain very complex conditions which he will specify. TUTORIAL, Case 3 (III:34-46).

Case Study 4: A researcher wants to see all information available which is associated with a particular PI number; all records associated with a particular PI number. See TUTORIAL, Case Study 4 (Pages III:47-56).

Case Study 5: A researcher wants to learn how to use the INFO System. See TUTORIAL, Case Study 5 (Pages III:57-74).

In addition, the TUTORIAL provides examples for using the GRIN Editor including summaries of the procedure. See TUTORIAL Case Study 2 (Pages III-:4,27,32).

The next section of this manual (Section II: Entering the GRIN Databank System) will explore the basic features of the system: equipment required to contact it; special features; how to reach it; and potential problems in establishing contact.

SECTION II

ENTERING THE GRIN DATABANK SYSTEM

The GRIN databank resides on a PRIME 750 mini-computer in the National Agriculture Library in Beltsville, Maryland. Public access is via telephone, either commercial, FTS, or TELENET. Currently, eight 1200 Baud lines and four 300 Baud lines are available for commercial and FTS users and a similar number available for TELENET users.

What Equipment Is Required to Use GRIN?

You will need only a terminal and a modem to communicate with GRIN. Commercial communications packages make the procedure easier but are not required. TELENET users are expected to have their own TELENET ID's and passwords in addition to their GRIN access codes (passwords).

TERMINAL and MODEM: Provided it is equipped with a 300 or 1200 baud modem, nearly any CRT or line printer terminal with an RS232C interface can communicate with GRIN. Settings may vary from system to system. All communication between GRIN and PUBLIC users assumes a line printer terminal, avoids block mode and screen "painting" templates, and uses 80 column format.

Special communications programs, available commercially, simplify the procedure. They allow you to alter special settings quickly, store numbers and place telephone calls automatically, and direct your computer to send material to permanent storage files or to a printer. If you are using a large insititutional computer system, a modem program is probably built in, and quite likely there are support personnel who will help you learn to use the system.

Since personal computer systems differ, initial problems may occur which require that you refer to your system manual or ask for help from your dealer or someone who fully understands your system. Technical information about the GRIN computer system, including system parameters, is summarized here. We will try to anticipate your problems and provide as much advice a possible.

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You should pay particular attention to the duplex setting which may be changed both on your equipment and for the GRIN system. Begin with your system on FULL duplex and then try HALF duplex, if necessary.

If you are unsuccessful in establishing communication with GRIN even after making adjustments for duplex, compare the GRIN technical information listed below with the technical information accompanying the program used with your modem or with the technical information in your system's user's manual.

Try to make your system settings consistent with GRIN's. GRIN's system default settings include the following:

TECHNICAL INFORMATION ABOUT GRIN

Full duplex;

X-ON/X-OFF enabled;

buffered protocol (using carrier detect) disabled;

input error checking disabled;

UPPER or lower case acceptable except during specified operations;

one stop bit;

no parity checking, that is neither even nor odd.

If you are unfamiliar with your system, you might want to discuss the appropriate settings with someone who is more familiar. Once you have identified the appropriate settings for your terminal, keep a record of them in a safe place.

Many of the commercial communications packages available for use with modems permit you to make simple changes in the parameters of your system and record them permanently to the disc along with appropriate phone number(s). Even if you can record them permanently on your modem package, keep another copy elsewhere. Programs are sometimes accidentally erased. Once you have established contact with the GRIN system for the first time, subsequent contacts will be easier.

What Do I Need to Know about Using the Keyboard?

Some special features which you need to know about include CARRIAGE RETURN, BACKSPACE, KILL, CONTROL KEYS:

RETURN, CARRIAGE RETURN, or ENTER: The commands you type at your terminal to send to the GRIN system are not activated until you press the return (carriage return, enter, or <cr>) key. Using the backspace key, you may make corrections in the information up until the time you enter it using the carriage return.

BACKSPACE: The ability to backspace is important in making corrections **BEFORE** the information or command has been entered into the system. The backspace allows you to back up and remove incorrect characters already visible on the line so that they may be replaced with correct ones. Although the old characters are overprinted in the case of immediate printed copy, the new characters are entered into the system.

On most terminals, the left arrow key produces the desired results. If this key does not work, try the delete key or check your system manual for the appropriate backspace key. The **KILL** key is equal to a series of backspaces which deletes or erases all entries on the line and allows you to start over.

CONTROL KEYS: The key labeled **CONTROL** is used in combination with one of the other keys (alphabet and some punctuation keys); together they produce a different response, called a "control character." Some of these control characters have special meaning in the GRIN system:

Control-P Pressing the control key together with the letter P produces the **BREAK** command. This command instructs the computer to interrupt the current procedure;

Control-S Pressing the control key together with the key for the letter S halts output to the video terminal so that the user may inspect it; **Control-Q** -allows the output to resume.

Octal values for the above keys may be found in the Glossary. Although the octal values are important technical information, unless you have an unusual or non-standard keyboard, probably you won't have to worry about them at all.

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How to Reach the GRIN databank

At the present time there are no charges or fees to use the GRIN databank other than those associated with a user's personal costs for a computer terminal and for establishing telephone communication with the GRIN system.

GRIN can be reached through the Maryland (Area code 301) numbers listed below. Since using any databank requires time for information to be scanned, sorted, and finally displayed, acquiring information may be expensive when the caller is long distance. GRIN may be reached by Federal Telecommunications System (FTS) users and by TELENET ID holders through the phone numbers and TELENET Addresses listed below. For the sake of economy, anyone planning extended use of GRIN or other long distance databanks might wish to investigate the Telenet system.

Maryland Telephone Numbers for Reaching GRIN

For 1200 Baud Users

(301) 344-4658
(301) 344-4659
(301) 344-4660
(301) 344-4661

(301) 344-4662
(301) 344-4663
(301) 344-4664
(301) 344-4665

For 300 Baud Users

(301) 344-4666
(301) 344-4667
(301) 344-4668
(301) 344-4669

FTS Users omit the area code

These numbers are on "rotaries" which means that if one number is busy, the next will be tried until an open line is located. By dialing either 344-4658, 344-4662, or 344-4666, you should have automatic access to the three numbers which follow each of them. If you receive a busy signal, it usually means that all lines are busy. If a number rings but is not answered, try the next number. The system is busiest during the early afternoon hours (Washington, D. C. time).

Prime's TELENET Network Address

The Telenet network address for the Prime in Beltsville is C 30152

TELENET Numbers

TELENET has local numbers in most metropolitan areas and an 800 number (800-424-9494), but these are useful only to holders of TELENET ID Numbers. For information about getting a Telenet number, try their customer information number: 800-336-0437

Dialing into the GRIN System

If you have received your access code (password) and know how to use your computer terminal, you are ready to contact GRIN.

Many personal computers and mainframe systems require few adjustments to communicate with a wide range of other computers. Don't be afraid to try it on your own. Just follow the instructions here.

If you are working from a **personal computer**, place the program disc for your communications package in the disc drive and turn on your system. You may also need to prepare a data disc and activate your printer now. Follow the instructions provided with your system.

If you are working from a **mainframe computer** terminal, you will need to know the appropriate commands to activate the communications program. If you don't know them, ask your data systems support person or refer to the appropriate section of your system manual.

Before placing the call to GRIN, you might want to check the duplex setting for your terminal. Most communications packages allow you to change some parameters including the duplex setting. Try **FULL DUPLEX** to start.

Now, take whatever steps your program requires to originate the call. Choose a telephone number from those above which apply to your situation. If you need to get outside an office system, **don't forget to dial 9** or whatever is appropriate. Many communications packages provide for a brief delay (sometimes entered as a comma) for transferring from 9 to the outside number you are dialing.

Most communications programs will inform you that the telephone is dialing. Next, some kind of message should be displayed which informs you that your system is waiting for a connection.

If the connection is successful, you should receive another message from your computer--something like "carrier connect." This message probably will be followed by a blank screen with, perhaps, a cursor (usually a small rectangle of light) to indicate that you should now **LOGIN PUBLIC** to the GRIN system.

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Some host systems (GRIN is the host to your system) greet every caller with a message as soon as a connection takes place. Not so with GRIN. You must speak directly to it first, and then it will respond.

When you think you are connected to GRIN, clear the system by pressing the carriage return key a few times; type "LOGIN PUBLIC" and enter it into the system by pressing the return key one more time:

LOGIN PUBLIC <return>

You may use capitals, small letters, or a combination of the two. At this point GRIN is not choosy. In some of the later commands you must carefully select capitals and small letters. In these cases we will inform you when the commands must be typed precisely, exactly as we show them; otherwise not to worry.

Usually you will have fewer problems if you keep the CAPS LOCK key pressed down. The CAPS LOCK key causes all letters to print in upper case (capitals); however, the numeral and punctuation keys are not affected. You must use the SHIFT key to print the special characters which are located above the numerals across the top of many standard keyboards.

If you have successfully connected with GRIN and correctly typed the LOGIN PUBLIC command, the system should greet you with something like the following:

```
-----  
PUBLIC (user 28) logged in Tuesday, 08 Jan 85 07:31:08.  
Welcome to PRIMOS version 19.2.10.  
Last login Tuesday, 08 Jan 85 00:20:08.  
-----
```

The first line of the above message designates that you are a public user logged into port number 28 (not the 28th user on the system) at 7:31 AM (and 8 seconds to be precise) on January 8, 1985. The second line welcomes you and indicates the version of the system in operation. The final line tells you that the last public user of port number 28 logged in at 12:20AM the same day.

IMPORTANT NOTE: Throughout the manual all GRIN messages similar to the one above will be enclosed in a box as shown. When we include our (and your) typed responses or commands, they will be shown in **bold faced type** with < > setting off any typed instructions which do not appear on the screen, like a carriage return: <return>. If we intersperse the GRIN message with comments, they will be enclosed by the following bold-faced brackets: { }.

If you have logged into GRIN successfully--and your **LOGIN PUBLIC** command is displayed properly on your screen,--you may skip the next few paragraphs and go to the next enclosed GRIN message immediately following Problem 4 (Page II-10), which begins:

**** Welcome to SYSB ****

Otherwise, read the following section which describes

????PROBLEMS WITH LOGIN????

You must be having problems. Don't despair. Most are easily solved. Perhaps the **LOGIN PUBLIC** command you typed is not displayed on the screen, or perhaps it is shown double--**LLOOGGIINN PPUUBBLIICC**. It is also possible that in spite of your correctly typed login entry, an error message appeared, or even more discouraging, perhaps nothing is happening.

PROBLEM 1: No Response from GRIN ????

If GRIN does not respond, it is possible that your system or your telephone line is not working properly. Check your telephone line directly to see if it is ringing. Pick up an extension and listen. If you hear a busy signal or if GRIN does not answer, try one of the other numbers listed. You will hear a shrill ring when GRIN answers your call.

If you have previously communicated with another external system, you might want to contact it now to verify that your communication program is working.

It is also possible, however, that even though you are connected, the **LOGIN PUBLIC** message did not reach GRIN. Wait a few seconds and if you do not receive a message, type **LOGIN PUBLIC** again.

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If after several tries, you are still unsuccessful in getting a response, go back to your system and change to **HALF DUPLEX** and begin again.

Some communications packages allow you to change parameters while still connected, but you should read your communication package manual to determine how to make changes. You may need to seek outside help from someone who knows your system's operations well and is willing to help you establish the initial contact.

The initial contact is the most difficult one. Do not hesitate to seek help from the GRIN DataBase Manager or from someone who knows your system well if you experience problems. Your system may require changes in some of the settings. Once you understand and record the proper settings for your computer system, you should have no problem contacting GRIN.

Of course, it is always possible that GRIN is temporarily out of order. You might wait and try again later or call the GRIN DataBase Manager to determine whether or not GRIN is having problems.

PROBLEM 2: Error Message from GRIN????

Another possibility is that you are connected to GRIN and have received the following error message:

```
-----  
login public  
Invalid command "LOGIN". (logo$cp)  
Login please.  
ER!  
-----
```

This kind of response usually results from an inaccurate login message; however, distortion in the communication lines might also be responsible. Pressing the carriage return a few times before sending the LOGIN PUBLIC message should have cleared the system.

In any case, if you received an error message, try again. Press the carriage return a few times to clear the system, and type in LOGIN PUBLIC followed by another carriage return.

If GRIN responds but you continue to get error messages, your machine may be sending improper characters. Check to be certain that you are typing the message properly; for example, you might be typing logon instead of login.

If this doesn't work, check your various system parameters and settings including character equivalencies if you do not have a standard keyboard. If you still cannot solve the problem, you will need help from someone familiar with your system's operation.

PROBLEM 3: Your LOGIN PUBLIC Does Not Show on the Screen???

Even if the LOGIN PUBLIC message does not appear on your screen as you type it, you may be properly connected and receiving the greeting messages. If this is the case, be patient until the **GRIN FUNCTIONS** menu appears. You can make a simple adjustment from HALF to FULL duplex and your commands should be echoed back and show up on your terminal screen. As soon as you are instructed to do so, type **FULL**. Be sure to do this as soon as possible. When you use longer and more complicated commands on the screen later, you will want to see exactly what you have typed in.

PROBLEM 4: Your LLOOGGIINN PPUUBLLIICC Is Doubled???

If your LOGIN PUBLIC look like this:

LLOOGGIINN PPUUBLLIICC

Again be patient--your eyes are not really fooling you. This is an easy problem to correct; in fact, it might correct itself. When the **GRIN FUNCTIONS** menu appears, you will make a simple adjustment from FULL to HALF duplex to correct the problem, if necessary. When you are instructed, you have only to type **HALF**. In some cases, however, the system will correct this problem automatically. For more information about duplex settings, see the Glossary entry under **Duplex Setting**.

When you reach the system, GRIN will display a greeting message which will look something like the one on the following page. Don't be alarmed if there are delays before the request for your Access Code appears, especially during regular working hours. These are normal.

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*** Welcome to SYSB ***
Type WHATS to display news and learn about system features

{Expect delays here,}

OK, COMO -NTTY

*** Welcome To GRIN (PRODUCTION Version) ***

{Delays here, as well; sometimes news messages also will appear.}

For Information and/or Assistance Contact:

GRIN DataBase Management Unit (DBMU)
USDA/ARS/PGGI
Bldg. 001, Rm 130 BARC-West
Beltsville, Maryland 20705

<FTS/(301)> 344-3318 or 344-2646

WELCOME TO ** GRIN **

ACCESS CODE:

The WHATS command does not apply to GRIN users. Ignore it.
News about the system is available from the main menu as **NEWS**.
The OK, COMO -NTTY message is a system message which lets you
know that your login is in progress. Sometimes it is slow to
appear. Again, be patient.

The last line requests your access code (your password.)
Simply type it in. If you type it incorrectly, you will receive
the following message:

ACCESS CODE: xxxx

INVALID ACCESS CODE
TRY AGAIN

ACCESS CODE:

Again, if you are having problems with the duplex, your password might appear doubled, or it might not appear at all. Never fear, the GRIN FUNCTIONS menu, which will allow you to change the duplex setting if necessary, will now appear as follows:

GRIN FUNCTIONS:

DATA	Database selections menu
VIF	VISTA-INFO convert FORTRAN
VIC	VISTA-INFO convert COBOL
INFO	INFO8S data manager
COGS	Catalogue of GRIN services
HELP	GRIN help facility
NEWS	GRIN news
FULL	Set terminal to full duplex
HALF	Set terminal to half duplex
EXIT	LOGOUT of GRIN

FUNCTION CODE:

If it is necessary, now is the time to change the duplex setting in the GRIN system. Do it **now**. If you wait until later, you may have to abandon work you have already done in order to return to this menu.

First make certain that the system has not already corrected the error. Type a letter in response to "FUNCTION CODE." If it appears normal, use the left arrow key to erase it and go on with the next program. If the letter is doubled or does not appear, again use the left arrow key to erase it, and type in one of the responses shown below:

FUNCTION CODE: **HALF** {if you are receiving a doubled message.}

FULL {if the commands you typed have not
appeared on the screen.}

Now you are ready to use GRIN. The next section of this manual will provide you with a tutorial session including several typical case studies. A summary of the procedures required to enter the GRIN system, together with summaries of each of the Tutorial Case procedures, may be found in the Summary Section of the manual.

SECTION III

THE TUTORIAL

This tutorial uses a case study approach. On your own computer, you will work along with a hypothetical researcher to solve several problems. You will be led through five case studies, step by step, and provided with concrete examples showing you what to expect.

If you find the work difficult, EXIT the system at the end of each case study and take a break. Read the next section before entering the system again. Even if you find the work easy, you probably will not want to do more than two case studies at a time.

If you have little or no experience with computers, we recommend that you repeat the processes exactly as they are described here so that you can compare your results with those illustrated in the text. In this way you will build confidence in your ability to work with your computer and the GRIN system.

The GRIN information which will appear on your video screen may not look exactly as it is shown here. Video terminals differ somewhat in the way they display information, and the positioning or spacing among words or groups of words may vary. In addition, GRIN is a data system in the process of becoming. Every day some additions or modifications are added to the system. Sometimes they affect the content of a particular screen of information.

Nevertheless, you should see a close approximation of what is shown here. If you encounter any serious discrepancies, contact a member of the Database Management Unit (DBMU) team. You will find a current address and telephone number listed in the greeting message as you enter the GRIN system as well as in the introductory section of this manual. The DBMU team is eager to know about the problems you encounter with the system.

If you are not logged into the GRIN system, you will want to return to the preceding section which explains the process in detail, or turn to the summary of this process in the **SUMMARY** section (Section VII) of this manual.

Tutorial Case Study 1

Use of the Catalogs (COGS)

John Smith, a researcher, is interested in certain kinds of field mustards, Brassicaceae. He has heard about the GRIN databank but has no idea what information it includes. Although John is interested in learning more about the GRIN system, at this moment his time is limited. He prefers to determine quickly whether the GRIN databank can be helpful to him in his own work.

Even though our hypothetical researcher is not interested in a general exploration of the overall GRIN system, we nevertheless recommend that he first use the Catalogue of Grin Services (COGS). Although it has limitations, COGS provides the most efficient way to get an organized general summary of information about a specific crop.

Through the next few minutes we will guide John Smith--and you--through the process of retrieving information about Brassica. You may wish to follow John Smith's efforts, step-by-step, or if you feel confident with computer systems, you may prefer to substitute another crop more valuable to your own research.

If you are not familiar with computers or the basic concepts of database retrieval, you probably should repeat the process using Brassica. Then you can duplicate the procedures using your own crop, comparing your results with those we illustrate here.

If you are not already logged in, go now to the summary in the preceding section or to the summary procedures and LOGIN. When GRIN FUNCTIONS menu is displayed, type COGS and enter a carriage return in response to FUNCTION CODE. After a short delay, the CATALOG OF GRIN SYSTEM (COGS) will be displayed, as follows:

FUNCTION CODE: COGS <return>


```
*****
**          CATALOG OF          **
**          GRIN SYSTEM  (COGS)  **
*****
```

COGS contains some summary information about GRIN, including descriptions of the various crop specific datasets contained within the DATA option, information about our curation sites and system summary statistics. COGS options are as follows:

OPTION	REPORT
1	Characteristic Data Catalogs
2	NPGS Sites
3	GRIN System Status
4	How to use COGS

Please enter option number or Q (QUIT) :

In response to "Enter option number or Q (QUIT):", You will type number 1 and press the carriage return. This option displays the GRIN Dataset Summary, which provides a list of the specific crops available like Brassica. (Q for Quit will take you back to GRIN FUNCTIONS.)

The first page of the GRIN DATASET SUMMARY, which lists 15 crop datasets, will be displayed on your screen. This summary is updated periodically by the GRIN DBMU team and does not necessarily reflect all of the information in the system at any given time.

A more current list, but one which is less well organized may be found elsewhere through the DATA option of the GRIN FUNCTIONS menu. This option is discussed under the DST option in the DATASELECTION section of this manual (Page V-28).

The summary you display on your screen may have been updated and may contain additional crop datasets. Enter 1 now, and the first page of the GRIN DATASET SUMMARY will be displayed. If the catalog has been updated, there may be variations in the following material:

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Please enter option number or Q (QUIT) : 1 <return>
{ Remember, the entries appearing in **BOLD** type are those you enter. }

GRIN DATASET SUMMARY

Option	Site	Dataset Query Name	No. of Records	No. of Descriptors
1	W-6	W6-CHICKPEA	772	10
2	W-6	W6-BEAN	9,152	57
3	W-6	W6-CABBAGE	611	27
4	W-6	W6-VICIA	210	17
5	W-6	W6-GRASS	8,811	37
6	W-6	W6-LENTIL	1,425	26
7	W-6	W6-LETTUCE	597	26
8	W-6 (empty)	W6-PEA	1,572	12
9	W-6	W6-SAFFLOWER	1,470	21
10	NC-7	NC7-ALFALFA	2,100	61
11	NC-7	NC7-BETA	330	40
12	NC-7	NC7-BRASSICA	845	36
13	NC-7	NC7-CORN	3,075	57
14	NC-7	NC7-CUCUMIS	649	28
15	NC-7	NC7-CUCURBITA	505	23

MORE?

You now have two choices. A carriage return will display the next page of the dataset summary, or since the crop in which you are interested (**NC7-BRASSICA**) is part of this display, you may now ask GRIN to provide additional information about it.

If you prefer to look at the remaining pages of the DATASET SUMMARY, simply enter a carriage return <return> to display the next page. Currently (as of 1/85), the system lists 23 crop datasets, displayed on two pages. As the system grows, additional pages will be added to this list. Simply enter additional carriage returns to display successive pages sequentially until you locate the crop you want.

Our researcher wishes to see additional information about **NC7-BRASSICA**. He does not care to view the remaining list of crops. He responds by answering **no** to MORE?, as shown below.

Any response to MORE? other than **n**, **N**, **no**, or **NO**--this includes entering the option number for **NC7-BRASSICA**--results in the display of the next page of the list; therefore, respond **no**, followed by a carriage return, exactly as shown below:

MORE ? **n**, **N**, **no**, or **NO** <return>

You will now be asked to indicate an option. John Smith simply types in number 12, the option number for **NC7-BRASSICA** and enters it with a carriage return <return>, as indicated, and the following information is displayed:

MORE ? n [or N, no, or NO] <return>

Enter option, UP (previous menu) or Q (QUIT): 12 <return>

NC-7 BRASSICA REPORT MENU

This menu contains information concerning characteristic data on Brassica. The data were collected by the North Central Regional Plant Introduction Station (NC-7) in Ames, Iowa. For additional information on where, when and how the evaluations were conducted, please contact the curator of the collection.

The descriptors have been arranged into five (5) reports. Each of the descriptors is described below in the report in which it appears.

If you are accessing this data with your own ad-hoc query, the subschema name, dataset-query-name and report names are all "NC7-BRASSICA". Sample:

USE SUBSCHEMA NC7-BRASSICA OF SCHEMA GRIN1-0

UNLOCK AREAS...

UNLOCK RECORDS...

SELECT FROM OBSERVATION-RECORD WHERE DATASET-QUERY-NAME = 'NC7-BRASSICA' AND
[descriptor1] = 'xxx' AND [descriptor2] > 'yyy'

DISPLAY USING NC7-BRASSICAn (where n is the report number described below)

MORE?

GRIN has provided you with the specific name of the collection site where you can order seed or get additional information about the **NC7-BRASSICA** collection. The curator's name and address will be available in COGS, **Option 2: NPGS Sites**.

A description of the information available about evaluation categories is also provided here. Information about **NC7-BRASSICA**'s 36 descriptors were at the time of this printout arranged in five (5) reports, displayed as five sequential screens on a video monitor. The number of descriptor categories per report varies depending on space requirements.

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Finally, you are provided with a series of commands to use in constructing special "ad-hoc" queries. You may wish to use these after you become more familiar with the system. For the present, however, we will work primarily with simple programs for retrieving the more commonly requested kinds of information. Make a mental note that the special query commands are available here for you to use later.

Now, press the carriage return to display the next page of information. "NC-7 Brassica Characteristic Data Descriptor List for Report Number 1" will appear, as follows:

MORE? <return>

=====

NC-7 Brassica Characteristic Data Descriptor List for Report Number 1

=====

Descriptor	Definition	Possible values
-----	-----	-----
GRW-HAB2	Maximum growth habit (1 - 9 where):	1 = Upright 9 = Prostrate
GRW-HAB1	Minimum growth habit (1 - 9 where):	1 = Upright 9 = Prostrate
DYS-FLWR	Number of days to flowering:	
SDLG-VIG2	Maximum seedling vigor (1 - 9 where):	1 = Good 9 = Poor
SDLG-VIG1	Minimum seedling vigor (1 - 9 where):	1 = Good 9 = Poor

MORE?

The labels (GRW-HAB2, etc.) which appear under the left hand column labelled "Descriptor" are important. These are the GRIN names for each descriptor category. They each provide a kind of password and must be used exactly as they appear if they are used to request data.

The next column labelled "Definition" briefly explains each descriptor category based on the best information available to the GRIN DBMU team. Finally, the description under "Possible Values" provides a description of the range of values. This information is helpful in making decisions about how to limit and interpret requests for specific information.

After viewing this report screen, you again have an opportunity to stop if the information you want is here. You may, of course, go on to the next screen. Remember that a carriage return or **any other response** to MORE? moves you to the next screen and so on throughout the five reports. **N**, **n**, or **no** in response to MORE? will again produce the message shown below:

Enter the report number, UP (previous), R (start over) or Q (QUIT):

The above message offers four choices: entering a number displays a page of sample data for the requested report; **UP** returns you to the GRIN DATASET SUMMARY; option **R** returns you to the first COGS menu, and option **Q** returns you to the main GRIN FUNCTIONS Menu.

Using the first option, enter number 1, as follows, to display a page of sample data based on the list of descriptors in the first report which was just displayed on the preceding page:

MORE? **n <return>**

Enter the report number, UP (previous), R (start over) or Q (QUIT):
1 <return>

Brassica Characteristic Data Report 1

ID NUMBER	IDENT	DSCDE	GRW HAB 2	GRW HAB 1	DAYS FLWR	SEEDG VIGOR2	SEEDG VIGOR1
PI 113310	1	13	1	1	0	0	0
PI 120923	1	13	1	1	0	0	0
PI 131249	1	13	1	1	0	0	0
PI 131512	1	13	0	0	0	0	0
PI 164841	1	13	0	0	0	0	0
PI 165595	1	13	1	1	0	0	0
PI 165608	1	13	0	0	0	0	0
PI 166063	1	13	0	0	0	0	0
PI 169057	1	13	0	0	0	0	0
PI 169059	1	13	0	0	0	0	0
PI 169060	1	13	0	0	0	0	0
PI 169061	1	13	0	0	0	0	0
PI 169064	1	13	0	0	0	0	0
PI 169066	1	13	0	0	0	0	0
PI 169067	1	13	0	0	0	0	0
PI 169068	1	13	0	0	0	0	0
PI 169069	1	13	0	0	0	0	0

Enter the report number, UP (previous), R (start over) or Q (QUIT):

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Notice above that while the last five columns of descriptor information (GRW-HAB2 through SDLG-VIG1) are described in the earlier report display, the first three columns are not. The identification numbers appear on all pages of the sample data reports. The other two categories (IDENT and DSCDE), however, may not have been defined by the collection site which submitted the data. Later, you might try the DST option of DATA to find out if any other information is available.

Whether you wish to follow John Smith's explorations of Brassica or are more interested in pursuing another crop, you need to print out all appropriate Characteristic Data Reports and sample data for the crop you are researching. Keep these lists handy in order to make requests for data in the next part of the tutorial and to help you interpret the results of your request.

Following the tutorial using NC7-BRASSICA should help you develop confidence in your ability to use GRIN. You may choose, however, to work with another crop like corn or tomatoes. In either case, you should print all of the report pages of your chosen crop for reference before you exit COGS. Be certain to activate your printer before entering the appropriate option number for the crop you select.

You may need to turn to **Summary Procedures** (Section VI, p. 2) for help in printing a reference list of crop descriptors. For your convenience, a full report (Numbers 1 through 5) for NC7-BRASSICA (current as of 12/84) is printed here. We will refer to it during the next steps in our GRIN tutorial.

After you print these reports, you may wish to stop. If this is the case, it is important that you enter QUIT which will return you to the main GRIN FUNCTIONS Menu where you will enter EXIT, as follows, in order to leave the GRIN system:

FUNCTION CODE: EXIT <return>

NOTE: If you do not formally exit the system using this method, you may prevent someone else from entering the space you have vacated until several hours have passed.

Descriptor and Data report Numbers 2 through 5 for NC7-BRASSICA follow this page so that you can compare them with your results. The Descriptor List and Data for the first report have already been displayed. Now, turn to the Summary (Page VI-2) if you need to review procedures for printing copies of the descriptor lists and accompanying data samples.

MORE? <return>

 =====
 NC-7 Brassica Characteristic Data Descriptor List for Report Number 2
 =====

Descriptor	Definition	Possible values
BLM-VIG2	Maximum bloom vigor (1 - 9 where):	1 = Good 9 = Poor
BLM-VIG1	Minimum bloom vigor (1 - 9 where):	1 = Good 9 = Poor
HARV-VIG2	Maximum harvest vigor (1 - 9 where):	1 = Good 9 = Poor
HARV-VIG1	Minimum harvest vigor (1 - 9 where):	1 = Good 9 = Poor
LEAF-NO2	Maximum leaf number (1 - 9 where):	1 = Few 9 = Many
LEAF-NO1	Minimum leaf number (1 - 9 where):	1 = Few 9 = Many
LEAF-SZ2	Maximum leaf size (1 - 9 where):	1 = Small 9 = Large
LEAF-SZ1	Minimum leaf size (1 - 9 where):	1 = Small 9 = Large

MORE? <return>

 =====
 NC-7 Brassica Characteristic Data Descriptor List for Report Number 3
 =====

Descriptor	Definition	Possible values
LEAF-RET2	Maximum leaf retention (1 - 9 where): at harvest:	1 = Retain 9 = Drop
LEAF-RET1	Minimum leaf retention (1 - 9 where): at harvest:	1 = Retain 9 = Drop
LEAF-TEXT2	Maximum leaf texture (1 - 9 where):	1 = Smooth 9 = Hairy
LEAF-TEXT1	Minimum leaf texture (1 - 9 where):	1 = Smooth 9 = Hairy
STEM-SZ2	Maximum stem size (1 - 9 where):	1 = Small 9 = Large
STEM-SZ1	Minimum stem size (1 - 9 where):	1 = Small 9 = Large
SEED-RET2	Maximum seed retention (1 - 9 where):	1 = Retain 9 = Dehisce.
SEED-RET1	Minimum seed retention (1 - 9 where):	1 = Retain 9 = Dehisce

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MORE? <return>

===== NC-7 Brassica Characteristic Data Descriptor List for Report Number 4 =====

Descriptor	Definition	Possible values
SEED-PROD2	Maximum seed production (1 - 9 where):	1 = Good 9 = Poor
SEED-PROD1	Minimum seed production (1 - 9 where):	1 = Good 9 = Poor
PCT-STND	Percent of original stand:	
PLT-HGT2	Maximum plant height:	
PLT-HGT1	Minimum plant height:	

MORE? <return>

===== NC-7 Brassica Characteristic Data Descriptor List for Report Number 5 =====

Descriptor	Definition	Possible values
SOURCE	Local Source country abbreviation (not GRIN standard):	
PLT-TYPE	Plant type:	BS = Bushy and slender BU = Bushy SB = Semi-bush SL = Slender
FLWR-COL	Flower color:	PINK = Pink YELLOW = Yellow
FLWR	Flower (habit):	DET = Determinate IND = Indeterminate
LIFE-CYC	Life cycle:	AN = Annual WA = Winter annual
CULT-REM	Cultivar, remarks and prior sources:	

Enter the report number, UP (previous), R (start over) or Q (QUIT):

On the next two pages data from report numbers 2 through 5 may be found. Sample data from report number 1 may be found on Page III-7.

SECTION III

TUTORIAL

SAMPLE DATA

Enter the report number, UP (previous), R (start over) or Q (QUIT): 2

NC-7 Brassica Characteristic Data Report 2

ID	NUMBER	BLOOM VIGOR2	BLOOM VIGOR1	HARV VIGOR2	HARV VIGOR1	LEAF NUM1	LEAF NUM2	LEAF SIZE1	LEAF SIZE2
PI	113310	0	0	0	0	0	0	0	0
PI	120923	0	0	0	0	0	0	0	0
PI	131249	0	0	1	1	0	0	0	0
PI	131512	0	0	0	0	0	0	0	0
PI	164841	0	0	0	0	0	0	0	0
PI	165595	0	0	0	0	0	0	0	0
PI	165608	0	0	1	1	0	0	0	0
PI	166063	0	0	1	1	0	0	0	0
PI	169057	0	0	1	1	0	0	0	0
PI	169059	0	0	1	1	0	0	0	0
PI	169060	0	0	1	1	0	0	0	0
PI	169061	0	0	1	1	0	0	0	0
PI	169064	0	0	1	1	0	0	0	0
PI	169066	0	0	1	1	0	0	0	0
PI	169067	0	0	1	1	0	0	0	0
PI	169068	0	0	1	1	0	0	0	0
PI	169069	0	0	1	1	0	0	0	0

Enter the report number, UP (previous), R (start over) or Q (QUIT): 3

NC-7 Brassica Characteristic Data Report 3

ID	NUMBER	LEAF RETEN2	LEAF RETEN1	LEAF TEXT1	LEAF TEXT2	STEM SIZE1	STEM SIZE2	SEED RETEN2	SEED RETEN1
PI	113310	0	0	0	0	0	0	1	1
PI	120923	0	0	0	0	0	0	0	0
PI	131249	0	0	0	0	0	0	0	0
PI	131512	0	0	0	0	0	0	5	5
PI	164841	0	0	0	0	0	0	0	0
PI	165595	0	0	0	0	0	0	1	1
PI	165608	0	0	0	0	0	0	0	0
PI	166063	0	0	0	0	0	0	0	0
PI	169057	0	0	0	0	0	0	0	0
PI	169059	0	0	0	0	0	0	0	0
PI	169060	0	0	0	0	0	0	0	0
PI	169061	0	0	0	0	0	0	0	0
PI	169064	0	0	0	0	0	0	0	0
PI	169066	0	0	0	0	0	0	0	0
PI	169067	0	0	0	0	0	0	0	0
PI	169068	0	0	0	0	0	0	9	9
PI	169069	0	0	0	0	0	0	0	0

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Enter the report number, UP (previous), R (start over) or Q (QUIT): 4

NC-7 Brassica Characteristic Data Report 4

ID NUMBER	SEED PROD2	SEED PROD1	PERCT STAND	PLNT HGT1	PLNT HGT2	A V	GENUS	SPECIES
PI 113310	1	1	100	100	135	Y	BRAS	SP.
PI 120923	1	1	0	0	0	Y	BRAS	JUNCEA
PI 131249	0	0	75	50	90	Y	BRAS	HIRTA
PI 131512	1	1	50	0	90	Y	BRAS	NIGRA
PI 164841	1	1	100	50	90	Y	BRAS	CAMPES
PI 165595	7	7	60	0	40	Y	BRAS	CAMPES
PI 165608	5	5	60	0	68	Y	BRAS	CAMPES
PI 166063	1	1	80	40	65	Y	BRAS	CAMPES
PI 169057	1	1	100	0	180	Y	BRAS	NIGRA
PI 169059	1	1	100	150	200	Y	BRAS	NIGRA
PI 169060	1	1	50	150	180	Y	BRAS	NIGRA
PI 169061	5	5	100	0	112	Y	BRAS	CAMPES
PI 169064	1	1	80	0	71	Y	BRAS	CAMPES
PI 169066	1	1	100	120	180	Y	BRAS	NIGRA
PI 169067	5	5	50	148	190	Y	BRAS	NIGRA
PI 169068	5	5	50	0	86	Y	BRAS	HIRTA
PI 169069	1	1	50	0	190	Y	BRAS	NIGRA

Enter the report number, UP (previous), R (start over) or Q (QUIT): 5

NC-7 Brassica Characteristic Data Report 5

ID NUMBER	SOURCE	PLT TYP	FLOWER COLOR	FLR	LF CY	CULTIVAR	REMARKS
PI 113310	CHINA	BU	YELLOW	IND	AN		
PI 120923	TURKY				AN		
PI 131249	NETH	BU	YELLOW	DET	AN		
PI 131512	NETH						
PI 164841	INDIA				AN		
PI 165595	INDIA	SL	YELLOW	IND	AN	SARSON	
PI 165608	INDIA				AN	SARSON	
PI 166063	INDIA				AN		
PI 169057	TURKY				AN		
PI 169059	TURKY				AN		
PI 169060	TURKY				AN		
PI 169061	TURKY				AN		
PI 169064	TURKY				AN		
PI 169066	TURKY				AN		
PI 169067	TURKY				AN		
PI 169068	TURKY				AN		
PI 169069	TURKY				AN		

Enter the report number, UP (previous), R (start over) or Q (QUIT): Q

SESSION COMPLETE

Tutorial Case Study 2

Selecting and Displaying Simple Data

Through using COGS, John Smith, our hypothetical researcher, has gained basic knowledge about the Brassica plant materials in one of the collections described by the GRIN system.

He has learned, for example, that the system has about 845 evaluation records for Brassica plants held by the North Central Regional Plant Introduction Station (RPIS) at Ames Iowa (NC-7). This collection is identified in GRIN as NC7-BRASSICA. See III:4).

He has also learned that these materials have been evaluated for as many as 36 different characteristics, and he has been able to determine which of the evaluation categories (Descriptors) are of immediate interest to him. See III: 4, 6, 9, 10.

John Smith is particularly interested in the harvest vigor of Brassica plants. The NC7-BRASSICA collection evaluates harvest vigor in two ways: maximum harvest vigor (HARV-VIG2) and minimum harvest vigor (HARV-VIG1). For a description, see COGS report number 2 on Page III-9 of this manual.

In both evaluations for harvest vigor, the range of values is set from 1 - 9 where 1 indicates good harvest vigor and 9 indicates poor harvest vigor. When John looks at the sample data provided with each report, he notices that many of the values are shown as zero (0).

NOTE: Plant materials entered into the GRIN system do not always have evaluations for every characteristic. A zero (0) entry usually means that no data was available. Sometimes, however, 0 represents a true zero value.

GRIN is currently developing a way to make clearer distinctions between these two possibilities, but for the present, the researcher must carefully check the evaluation range and criteria for each category. This information is presented in COGS.

Problem 2a: John Smith would like to find out how many of the 845 NC7-BRASSICA plants which are part of the GRIN system have been evaluated for harvest vigor.

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Since, according to the criteria defined in report 2, the range of values in both cases is 1 (Good) to 9 (Poor), John may safely assume that a 0 value means that the plant material has not been evaluated; therefore, since John wants to know how many of the 845 NC7-BRASSICA plant materials have been evaluated, he wants to know how many of the plants have values greater than 0 for harvest vigor.

Again, you may wish to follow John's procedures before beginning your own search. If you feel confident, you may substitute your own crop and descriptor characteristics.

From now on, the term "enter" will be used alone to indicate that you must **type** in a command AND **press the carriage return** in response to a prompt. A prompt indicates that a command needs to "ENTER"ed into the system.

Until this time most prompts have either indirectly or directly asked questions. For example, you answered "yes" or "no" to "More?"; you supplied several option numbers specifying particular crops, crop reports, and other menu choices; and you responded COGS to the "FUNCTION CODE:" request on the GRIN FUNCTIONS Menu. In this case study you will encounter two new prompts (> and >>). In some cases these will be preceded with explanations and in others you will have to know what the system wants. Examples follow soon.

Earlier, when John finished printing the five NC7-BRASSICA reports, he entered Q for Quit and was returned to the main GRIN FUNCTIONS menu where he could choose to EXIT or to continue. In response to the FUNCTION CODE: request, he can immediately enter DATA and proceed to the "GRIN QUERY MENU OPTIONS," as shown:

NOTE: Remember that "enter" means type in the command and press the carriage return.

GRIN FUNCTIONS:

DATA	Database selections menu
VIF	VISTA-INFO convert FORTRAN
VIC	VISTA-INFO convert COBOL
INFO	INFO8S data manager
COGS	Catalogue of GRIN services
HELP	GRIN help facility
NEWS	GRIN news
FULL	Set terminal to full duplex
HALF	Set terminal to half duplex
EXIT	LOGOUT of GRIN
FUNCTION CODE: DATA <return>	

[DISCOVER: DBMS/PRISAM Rev. 1.0]

{Pause occurs here.}

Executing private startup procedure STARTUP....

{Pause occurs here.}

Virtual record count: 1

Total number of virtual records: 1

GRIN QUERY MENU OPTIONS

OPTIONS	ACTIONS
ACC	GRIN Passport data selections
COOP	GRIN Cooperator selections
EVAL	GRIN Crop Evaluation data selections
DST	GRIN Dataset descriptions
MISC	Create your own ad hoc selection
PRIM	PRIMOS utilities and status commands
SAV	SAVE your query output to PRIMOS level. First SAVED file called DATA. You name 2nd thru Nth
INIT	Initialize these menus and procs following error

MENU = Redraw this menu HOW = Short Instruction QUIT = Terminate session

VERSION 2.0

>

NOTE: For a complete explanation of the various options provided in this menu and an explanation of the versions, turn to **DATA SELECTION** (Section V of this manual).

In order to determine how many of the **NC7-BRASSICA** records have been evaluated for harvest vigor, John Smith selects the "GRIN Crop Evaluation data selection" option of this menu: **EVAL**. In response to the prompt > on the final line of the menu display above, enter **EVAL** and the **SITE SELECTIONS FOR CROP EVALUATION QUERIES**, will appear as follows:

>EVAL <return>

SITE SELECTIONS FOR CROP EVALUATION QUERIES

OPTION SITE

S1 Crop Advisory Committee (CAC) datasets
S2 North Central Region Plant Int. Sta. (NC-7) - Ames, Iowa
S3 Southern Region Plant Intro. Station (S-9) - Experiment, Ga
S4 Western Region Plant Intro. Sta. (W-6) - Pullman, Wash.
S5 Northeast Region Plant Intro. Sta. (NE-9) - Geneva, N.Y.

MENU Back up to main menu QUIT Terminate query session

VERSION 2.0

>

Based on the information he obtained in COGS, John Smith knows that the Brassica collection in which he is interested is located at the "North Central Region Plant Int. Sta. (NC-7) - Ames, Iowa (S2)." He, therefore, continues by selecting option S2 which will display the list of crops for site NC-7. Following the prompt >, enter S2, as follows:

VERSION 2.0

> S2 <return>

NC-7 CROP EVALUATION QUERIES

OPTION	CROP	OPTION	CROP
NC1	Alfalfa	NC2	Beta
NC3	Brassica	NC4	Corn
NC5	Cucumis	NC6	Cucurbita
NC7	Daucus	NC8	Forage Legumes
NC9	Grasses	NC10	Helianthus
NC11	Lathyrus	NC12	Melilotus
NC13	Tomato		

MENU Back up to main menu QUIT Terminate query session

VERSION 2.0

>

NOTE: If nothing happens on your screen after typing EVAL or S2, you might have forgotten to press the carriage return. The <return> is necessary to send your message to GRIN.

As of January 1985, site NC7 (The North Central Region Plant Int. Sta.-Ames, Iowa) had entered data into the GRIN system describing 13 crops. Each has been assigned an option designator (NC1 - NC13). Information about the NC7-BRASSICA materials may be obtained through option NC3.

Recall that John Smith wants to find out how many of the approximately 845 Brassica plants classified by GRIN have been evaluated for harvest vigor. John Smith begins by entering NC3. Before you make any more entries, read through the next few pages in their entirety. You will be instructed to make your entries when you reach the final summary of John Smith's commands.

```
> NC3 <return>
```

```
Enter AND and conditions, or <cr>. Maximum 160 characters
```

```
>>
```

You are already familiar with > as a prompt for commands. This is the same symbol that is used to designate the condition "greater than." The double prompt, >>, indicates the first of three opportunities to specify conditions.

John has already specified to GRIN that he is interested in the NC7-BRASSICA plant records. GRIN now asks John to provide specific information about the kind of plant materials he wants to see. The Descriptor categories labelled HARV-VIG1 and HARV-VIG2 provide access to the information John wants.

John first must decide exactly how to ask for information. Does he want GRIN to identify all NC7-BRASSICA plant materials which have been evaluated for either one of the two categories or only those plant materials which have been evaluated for both categories?

John decides that he is interested, at least at first, in only those plants which have been evaluated for both categories. He must now specify that he wants GRIN to select only those records in which the plant materials have been evaluated for both categories; that is, he must ask for those plant records where the values are recorded in HARV-VIG1 and in HARV-VIG2. Since both conditions must apply for a record to be selected, the conditions of the command must be introduced by and joined with AND.

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If John Smith wanted records which have been evaluated for either HARV-VIG1 or for HARV-VIG2 but not necessarily for both, he would join the conditions with OR. A complete description for this option will be provided later in this tutorial.

John may enter as many conditions as he likes on this first line, provided that the entries do not exceed a total of 160 characters. The two conditions in this first example will fit on one line. Since there are two more opportunities to enter conditions, however, John may choose to enter each condition on a separate line.

John's command begins with AND followed by the first condition, HARV-VIG1 > 0. The second condition, HARV-VIG2 > 0 is then joined to the first by another AND. Because they will be easier to check for typing inaccuracies, John enters each condition on a separate line in this first example.

It is important to remember that the descriptor name must be entered **exactly** as it is shown in COGS. This means **exact** capitalization, punctuation, and spacing. After making certain that the first condition is correctly typed in, John enters a carriage return and goes on to enter the second in the same way:

```
-----  
> NC3 <return>  
Enter AND and conditions, or <cr>. Maximum 160 characters  
>>AND HARV-VIG1>0 <return>  
  
continue conditions or <cr>  
>>AND HARV-VIG2>0 <return>  
-----
```

John will be given one more opportunity to enter conditions. Remember that each opportunity provides 160 character spaces; therefore, a considerable number of conditions may be entered.

NOTE: Always complete a condition before the end of each 160 character line. Notice, however, that 160 characters extends beyond the range of most video monitors which usually display 40 or 80 characters per line. Each 160 character line is "wrapped," which means it continues automatically to the next line on your terminal screen. This "wrapping" feature allows you to enter characters without a carriage return until you reach the 160 character limit. Do not exceed this limit. Find a convenient stopping point before the end of the 160 characters and enter a carriage return to go on to the next line.

An example which places more than one condition on each line will be provided later in the tutorial. All conditions in this example were entered on the first two lines. You need only enter another carriage return following the final request for conditions, as shown below:

> NC3 <return>

Enter AND and conditions, or <cr>. Maximum 160 characters
>>AND HARV-VIG1>0 <return>

continue conditions or <cr>
>>AND HARV-VIG2>0 <return>

continue conditions or <cr>
>> < return >

{A long pause may be encountered here. Be patient.}

Virtual record count: [1. . . 466] 466

Total number of virtual records: 466

>Enter DISPLAY USING NC7-BRASSICAN where n is the report number 1
through 5 >>

The "Virtual record count" begins with number one (1) but changes automatically on the screen as GRIN finds records which satisfy the search criteria. The pause noted above varies in length depending on how long it takes GRIN to find the first record. When the search is finished, the "Total number of virtual records" will be displayed.

If, at any time during the search, John Smith feels he has a sufficient number of records, he may stop the selection process by entering a **BREAK**, usually the **Control-P**.

Unless your system has designated a specific **BREAK** key, use **Control-P** to send a Break command to GRIN. To enter a **Control-P**, simply hold down the **control** key at the same time the letter **P** is pressed. After entering the **Control-P**, the selection process may continue for a few seconds before it terminates and then asks whether you want to abort the procedure and retain the partially selected table. Simply respond "yes" to the first and, for the present, "no" to the second question, and you will again receive the > prompt allowing you to enter a new command, as follows:

Enter <CR> to continue: <Control-P>
QUIT.

Do you wish to abort this command? Y {or Yes}
do you wish to retain the partially selected table? N {for No}
>

The Control-P is not a command to Quit, although you may quit by entering Q after receiving the new > prompt. Control-P notifies GRIN that you wish to end a current selection process before it is fully complete. The Control-P option is particularly important to remember when working with large numbers of records from which you wish to select a certain number at random.

In this case, John Smith wants to know how many records have been evaluated for harvest vigor and, therefore, allows the program to run to its completion.

The virtual record number of 466 reflects the total number of records selected as meeting both criteria for harvest vigor. Since we permitted the program to run to its completion, we know that of the 845 NC7-BRASSICA records, only 466 have been evaluated for both HARV-VIG1 and HARV-VIG2.

Following its display of the total number of virtual records, GRIN provides a message describing one way to display data about the plant materials selected. Because most video terminal screens are not large enough to display all of the evaluation data at one time, the information about NC7-BRASSICA has been formatted into the five separate tabular reports, as specified in COGS. The lower case n following the crop name refers to the report numbers as they were shown in the COGS printout of characteristics.

Before going further, review the preceding summary of John Smith's commands, more or less as they will be displayed on your screen. See page III:19.

Now it is time for you to enter the commands using John Smith's program or a similar one of your own for another crop. Remember, your commands must be entered carefully. GRIN can be unforgiving. Spell the descriptor names exactly as they appear in the descriptor lists. Do not forget the introductory AND.

If you make an error, use the left arrow key to back up and erase the inaccurate entry and retype it. Once you press the carriage return, it is too late to correct mistakes unless you use an edit procedure which will not be described until later.

If you make a mistake in your entry, don't despair. Everyone does it. Ignore it and go on. The program won't work, but you will get another chance to begin again from the NC3 command, as the following examples will show. Since this is a simple program, there is little to lose if you have to start over. So--don't worry, plunge in.

> NC3 <return>

Enter AND and conditions, or <cr>. Maximum 160 characters

>> AND HARV-VIG 1 > 0 <return>

continue conditions or <cr>

>> AND HARV-VIG 2 > 0 <return>

continue conditions or <cr>

>> <return>

Enter report number for display. 1 through 5 >> 2 <return>

{If the above request appears at this time, enter the number for any one of the five reports. }

ERROR:

"AND HARV-VIG 1 > 0"

Found INTEGER; expected the following:
DOT

>

Unfortunately, HARV-VIG1 was typed improperly. There should not be a space between the G and the 1. The same problem is repeated on the second line for the HARV-VIG2 condition as well. The > prompt allows you to begin again, as follows on the next page:

 >NC3 <return>

Enter AND and conditions, or <cr>. Maximum 160 characters

>> AND HARV-VIG1 > 0 <return>

continue conditions or <cr>

>> AND HARV-VIG2 > 0 <return>

continue conditions or <cr>

>> <return>

{Pause--sometimes long--usually occurs.}

Virtual record count: [counts 1 to 466]

Total number of virtual records: 466

Enter DISPLAY USING NC7-BRASSICAn where n is the report number 1 thru 5

>>

 John's next step is to display some of the data describing the 466 records selected. Responding to the above command, he retypes the information provided, substituting the appropriate report number for "n." Since harvest vigor is part of report number 2, he uses 2, as follows:

 Enter DISPLAY USING NC7-BRASSICAn where n is the report number 1 thru 5
 >>DISPLAY USING NC7-BRASSICA2 <return>

NC-7 Brassica Characteristic Data Report 2

ID NUMBER	BLOOM VIGOR2	BLOOM VIGOR1	HARV VIGOR2	HARV VIGOR1	LEAF NUM1	LEAF NUM2	LEAF SIZE1	LEAF SIZE2
PI 131249	0	0	1	1	0	0	0	0
PI 165608	0	0	1	1	0	0	0	0
PI 166063	0	0	1	1	0	0	0	0
PI 169057	0	0	1	1	0	0	0	0
PI 169064	0	0	1	1	0	0	0	0
PI 169066	0	0	1	1	0	0	0	0
PI 169067	0	0	1	1	0	0	0	0
PI 169068	0	0	1	1	0	0	0	0
PI 169074	1	1	1	1	0	0	0	0
PI 169075	1	1	1	1	0	0	0	0
PI 169076	1	1	1	1	0	0	0	0
PI 169077	1	1	1	1	0	0	0	0

Enter <CR> to continue:

The information displayed above contains the evaluation data for 18 of the 466 records selected. The information about these 18 plants is arranged in eight descriptor categories. Pressing a carriage return following each page of data allows you to scroll through the entire list of 466 records, 18 per page. If you prefer to stop before looking at all 466, you may again use Control-P.

A Control-P may be entered during a selection or a display process or at the end of any page in a display process. If it is entered during the display process, the page in process will finish before the program QUITs. If it is entered at the end of the page, in response to the request for a carriage return, the QUIT response will follow, as shown below.

Notice that in a display process you are not asked if you wish to retain a partially selected table. A display process merely displays the information which is already available.

Enter <CR> to continue: {The Control-P may be entered here or
earlier during the data display.}

QUIT.

Do you wish to abort this command? Y {or Yes}

>

The new prompt > provides an opportunity to display the data selected in a different way. John may look at data from any of the five reports he specifies. These reports correspond to those described in COGS. This process, however, is a time consuming one, especially for 466 records.

Suppose that John Smith is interested in looking at the data selected only in relationship to a few descriptor categories; for example, harvest vigor, bloom vigor, seed production, source, plant type, and cultivar information. These descriptors are found on report pages 2, 4, and 5, but John would like to view them in one report.

By listing the names of all of the descriptors that he wants to see, John can design his own report format. This command begins with "DISPLAY ONLY" followed by a list of the descriptors. The names on the list must be separated with commas. If John wants to see the identification number, he must specifically include it; otherwise it will not appear.

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Since the descriptor name for the identification number (OBS-ACC-ID) does not appear in the COGS list, make a special note of it.

NOTE: In the line below, the name for the identification number is entered incorrectly. Type it as it is shown so that you will get an error message. You will then learn how to make corrections using the editor instead of retyping the entire program. Enter the line **exactly**, as shown:

```
> DISPLAY ONLY ACC-OBS-ID, HARV-VIG1, HARV-VIG2, BLM-VIG1, BLM-VIG2,  
SEED-PROD1, SEED-PROD2, SOURCE, PLT-TYPE, CULT-REM <return>
```

ACC-OBS-ID is not an item in the current table.

There is indeed a mistake in the above list. Although many error messages appear far more complex and may frustrate more than help, GRIN tries to help you locate errors through the messages it provides. The above message is very precise about which descriptor item is incorrect.

Sometimes GRIN underlines the offending portion of an entry, but often the message is obscure and you must rely on your own careful checking to find the error. If the entry is short or the error impossible to locate, it may be easier to retype the program in full; if it is long and if you can locate the error, as in this case, it is easier to edit it.

John accidentally reversed part of the plant identification descriptor name: ACC-OBS-ID instead of **OBS-ACC-ID**. Since this descriptor is not included in the COGS list, it is the source of many mistakes. Because most lists of data have little meaning without their identification numbers, it is an important variable to remember. We can edit this command quickly by using an editor which is built into the GRIN system.

Using the GRIN Editor

First, type ED in order to enter the editor program.

> ED <return>

--- Edit Mode ---

: N <return>

1: DISPLAY ONLY ACC-OBS-ID, HARV-VIG1, HARV-VIG2, BLM-VIG1, BLM-VIG2,
SEED-PROD1, SEED-PROD2, SOURCE, PLT-TYPE, CULT-REM

{Now enter your change, as follows:}

: C/ACC-OBS/OBS-ACC/

GRIN indicates that it is in --- Edit Mode --- and provides a new prompt: a colon (:). Type n or N, which means next, until the line you wish to edit appears. Sometimes you will have to display several lines before reaching the one you want; also some of the lines might be blank. Only when GRIN displays the line you want, can you make changes.

Entering a change requires three steps: first, type C/ to indicate that you wish to change material; second, type in an exact reproduction of the incorrect material that you wish to change, ACC-OBS/; and finally type in the replacement as it should appear, OBS-ACC/. Notice that each section is ended with a / in order to separate it from the following one. GRIN then displays the corrected material for you to review, as follows:

: C/ACC-OBS/OBS-ACC/ <return>

1: DISPLAY ONLY OBS-ACC-ID, HARV-VIG1, HARV-VIG2, BLM-VIG1, BLM-VIG2,
SEED-PROD1, SEED-PROD2, SOURCE, PLT-TYPE, CULT-REM

{Check again for accuracy. Then, enter FILE, which takes you out of Edit and returns you and the corrected line to the program. If your command is now correct, the program will execute automatically, as indicated below; if not, try editing again.}

: FILE <return>

> DISPLAY ONLY OBS-ACC-ID, HARV-VIG1, HARV-VIG2, BLM-VIG1, BLM-VIG2,
SEED-PROD1, SEED-PROD2, SOURCE, PLT-TYPE, CULT-REM

{The display usually takes place rapidly and appears in a vertical line, as shown on the next page.}

OBS-ACC-ID	PI	131249
HARV-VIG1		1
HARV-VIG2		1
BLM-VIG1		0
BLM-VIG2		0
SEED-PROD1		0
SEED-PROD2		0
SOURCE		NETH
PLT-TYPE		BU
CULT-REM		

OBS-ACC-ID	PI	165608
HARV-VIG1		1
HARV-VIG2		1
BLM-VIG1		0
BLM-VIG2		0
SEED-PROD1		5
SEED-PROD2		5
SOURCE		INDIA
PLT-TYPE		
CULT-REM		SARSON

OBS-ACC-ID	PI	166063
------------	----	--------

Enter <CR> to continue:

If the command was entered correctly, the first screen of data will appear. In this case, complete information for two of the identification numbers and the first line of the third one is displayed vertically. Again, the listings for all 466 of the selected plants may be displayed by entering carriage returns at the end of each page. And also again, the CONTROL-P may be used at any time to stop the process, as shown below:

Enter <CR> to continue: <Control-P>

QUIT.

Do you wish to abort this command? Y <return>
>

This kind of vertical display of information is time consuming and does not allow for easy comparisons among data as would tables. After some thought, John Smith decides he is interested in looking at only a few of the Descriptor categories.

If he confines himself to about six descriptor categories, including the identification number, the information may be displayed horizontally with 18 records per page. The number of categories you may specify depends, naturally, on the amount of space each descriptor category requires.

It is not necessary to rewrite the full command. Let's edit out the categories to be eliminated, as follows:

Review of the Editing Process

```
> ED      <return>
```

```
--- Edit Mode ---
```

```
:N <return>
```

```
1: DISPLAY ONLY OBS-ACC-ID, HARV-VIG1, HARV-VIG2, BLM-VIG1,  
   BLM-VIG2, SEED-PROD1, SEED-PROD2, SOURCE, PLT-TYPE, CULT-REM
```

```
: C/BLM-VIG1, BLM-VIG2, SEED-PROD1, SEED-PROD2, //      <return>
```

{Notice the last two slashes are // shown together. There is no replacement information between them; therefore, the old material is not replaced; it is simply deleted. The revised command is then displayed, as shown below:}

```
1: DISPLAY ONLY OBS-ACC-ID, HARV-VIG1, HARV-VIG2, SOURCE,  
   PLT-TYPE, CULT-REM
```

{If the command is now correct, file it.}

```
: FILE <return>
```

```
> DISPLAY ONLY OBS-ACC-ID, HARV-VIG1, HARV-VIG2, SOURCE,  
   PLT-TYPE, CULT-REM
```

{After you enter "File," your command executes automatically. This time the information will be displayed in a horizontal table. Only part of it is shown on the next page.}

OBS-ACC-ID	HARV-VIG1	HARV-VIG2	SOURCE	PLT-TYPE	CULT-REM
PI 131249	1	1	NETH	BU	
PI 165608	1	1	INDIA		SARSON
PI 169074	1	1	TURKY		AUTUMNALIS
PI 170032	1	1	TURKY		
PI 171538	1	1	TURKY	BU	
PI 173852	7	7	INDIA		SARSON
PI 173857	5	5	INDIA		
PI 173861	1	1	INDIA		MIXTURE

Enter <CR> to continue: <Control-P>

QUIT.

Do you wish to abort this command? Y

Again, you may scroll through all 466 records, or you may use the Control-P to break and move to another option. For purposes of this example, let us suppose that John Smith is curious about whether any of the NC7-BRASSICA plant materials have been evaluated for one category but not the other.

PROBLEM 2b: John Smith would like to find out how many of the 845 NC7-BRASSICA plants have been evaluated for either one of the two descriptor categories for harvest vigor: HARV-VIG1 OR HARV-VIG2. This number should be at least 466 since John Smith has already determined that 466 plants have been evaluated for both categories.

Begin by entering the NC3 option for NC7-BRASSICA again. In response to the request for conditions, begin with AND. Combine the independent conditions using OR and enclose them within a parenthesis: (CONDITION 1 OR CONDITION 2).

Use the following format to specify selections based on either of the two conditions:

> NC3 <return>

Enter AND and conditions, or <cr>. Maximum 160 characters

>> AND (HARVIG1>0 OR HARVIG2>0) <return>

continue conditions or <cr>

>>

continue conditions or <cr>

>>

HARVIG1 is not an item in the current subschema

Notice that HARV-VIG was entered improperly. One of the V's and the hyphen were omitted: HARVIG instead of HARV-VIG. As a result, we are told that "HARVIG1 is not an item in the current subschema." Let's begin again and do it right. Remember that the names of descriptors must be entered **exactly** as specified: **HARV-VIG1 AND HARV-VIG2**. Since this is a short statement, we will retype it instead of using the editor.

>NC3 <return>

Enter AND and conditions, or <cr>. Maximum 160 characters
>> AND (HARV-VIG1>0 OR HARV-VIG2>0) <return>

continue conditions or <cr>
>> <return>

continue conditions or <cr>
>> <return>

Table DATA already exists. Do you wish to overwrite it? Y
 <return>

The 466 records of data selected in the first program currently occupy a Table called DATA which is provided automatically by the GRIN system. If you wish to keep the first set of data for later use during this session, you must do so now. If you are exploring the GRIN system along with John Smith, there is no need to keep the data at this point. Information about saving data will be provided later in the tutorial.

NOTE: If you need to save your data now, see the **SAV** option of **DATA** (Page V-45) or **TUTORIAL** Case Study 5 (Page III-59,61).

Responding **Y** for Yes as we have done above, tells GRIN that the earlier data is no longer needed and the new data may be copied over it into the same table. After responding **Y <return>**, the system will begin the new search you have requested, as shown on the next page:

Enter DISPLAY USING NC7-BRASSICAn where n is the report number 1 thru 5
>>

John Smith knows that 466 plants have been evaluated for harvest vigor. Now he would like to take another approach. He decides that he would like to look at those plants that had been evaluated for harvest vigor which have as their source (SOURCE) the country of India.

There are several ways to approach this problem. One way is to save the data already collected and copy it into another processing area called **INFO** where it may be looked at in a variety of ways. In the last section of this tutorial and in the **DATA SELECTION** section of this manual, saving **Tables** of information and copying them into **INFO** will be described.

Most of the operations available through INFO may be carried out here in the DATA-EVAL program although these search procedures often take longer, especially when a large number of records is involved. Since NC7-BRASSICA is a relatively small collection (fewer than 1000 records), the EVAL option of DATA is satisfactory and gives us another opportunity to work through this process.

Begin again with NC3. John Smith now adds a separate AND statement. The resulting data records will be among the 466 selected during the last command, but this time only those records which have as their source the country India will be selected.

Again, we begin with AND. Since we have an OR statement, use a parenthesis around the entire OR statement which contains the two harvest vigor conditions.

We could avoid the use of the parenthesis in this case since we know that all records evaluated for one category of harvest vigor have been evaluated for both of the categories. In this case all three descriptor categories would be joined by AND: (AND . . . AND . . . AND).

For purposes of illustrating the combination of AND and OR statements, however, we will use the first version. The country name India must be entered exactly as it appears in the source file and must be in all CAPS, as follows:

NOTE: Whenever actual data values stored in the information system are used, like NC7-BRASSICA or INDIA, they must be capitalized. Although many commands permit you to use lower case letters, capitals are often required. Since lower case letters are not specified as often, your commands are usually safer when typed in with capital letters. In some cases, lower case letters will be specified.

> NC3 <return>

Enter AND and conditions, or <cr>. Maximum 160 characters
>> AND (HARV-VIG1>0 OR HARV-VIG2>0) AND SOURCE=INDIA <return>

continue conditions or <cr>
>> <return>

continue conditions or <cr>
>> <return>

ERROR:
"AND (HARV-VIG1>0 OR HARV-VIG2>0) AND SOURCE=INDIA"

Found NAME; expected one of the following:
PLUS MINUS INTEGER DECIMAL_NUMBER
LITERAL

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Notice that INDIA is underlined in the preceding message, suggesting that it is in error. The remainder of the error message is part of a general program and it will not often be helpful to you in defining the problem.

NOTE: This terminology may be found in some detail in the HELP option (the Vista Help Utility) of DATA. This option provides a list of the commands used by VISTA, the system in which GRIN was established. Unless you plan on using GRIN heavily to solve special problems, you will not have to learn this system. If you have special problems, contact the GRIN DBMU Manager to discuss the best way to solve them.

In this particular case, India is what the system refers to as a LITERAL; that is, it is composed of letters and is not a simple numerical designation. LITERALS must be enclosed with quotation marks ("INDIA"). Since the statement is a long one, we will use the editor: C/INDIA/'INDIA'/. Either single or double quotes may be used, but they must be the same.

Review of the Editing Process

>ED <return>

--- Edit Mode ---

: N <return>

1: select for data from observation-record where dataset-query-
name is 'NC7-BRASSICA'

: N <return>

2: AND (HARV-VIG1>0 OR HARV-VIG2>0) AND SOURCE=INDIA

: C/INDIA/"INDIA"/ <return>

2: AND (HARV-VIG1>0 OR HARV-VIG2>0) AND SOURCE="INDIA"

{Notice here that we had to enter N twice in order to find the line we wished to edit. When the correction is complete, "file" it, as follows:}

: FILE <return>

> select for data from observation-record where dataset-query-
name is 'NC7-BRASSICA'

> AND (HARV-VIG1>0 OR HARV-VIG2>0) AND SOURCE="INDIA"

>

>

>

{The program may pause after the second or third prompt >. If it does, try a carriage return. }

Table DATA already exists. Do you wish to overwrite it? Y
<return>

{The program will now run. }

Virtual record count: [1 - 144] 144

Total number of virtual records: 144

Enter DISPLAY USING NC7-BRASSICAn where n is the report number 1 thru 5
>> DISPLAY ONLY OBS-ACC-ID, HARV-VIG1, HARV-VIG2, SOURCE
<return>

{Since John Smith is interested in harvest vigor and source, the above command displays only those descriptors along with the identification number. Only part of the table is shown below.}

OBS-ACC-ID	HARV-VIG1	HARV-VIG2	SOURCE
------------	-----------	-----------	--------

PI 165608	1	1	INDIA
PI 166063	1	1	INDIA
PI 173852	7	7	INDIA
PI 175050	1	1	INDIA
PI 175052	5	5	INDIA

Enter <CR> to continue: <Control-P>

QUIT.

Do you wish to abort this procedure? Y <return>

>

We have now solved several typical simple problems that a plant researcher might bring to GRIN. Let's summarize the steps used, and then using the summary, pose a more complex problem. The Summary and a Summary of the GRIN Editor will be found in the SUMMARY section of this manual (Pages VII-3,5).

If you are tired, you may want to exit the system and return to do the next case study problem later. Type Quit and you will be asked if you wish to terminate the Session. Respond "yes" to return to the GRIN FUNCTIONS menu where you may EXIT. The end of Case Study 2 is a good place to take a break. If you are not tired, however, you might want to finish the next Case Study before stopping.

Tutorial Case Study 3

Selecting Data with Multiple Conditions

John Smith is now getting down to serious business. He knows that a large number of plant materials are candidates for his research project. Since he would like to work with only a few, no more than half a dozen individual genetic types, he needs to narrow the field from the 466 or 144 selected earlier.

His first step is to decide which characteristics besides harvest vigor are important to him and develop a list of criteria for their selection. He begins by listing the criteria in a series of AND statements which he will later combine.

His first interest, of course, is harvest vigor. He knows that 466 plants have been evaluated for this characteristic and decides that only those plants showing excellent harvest vigor should be selected. He establishes the acceptable values for minimum harvest vigor (HARV-VIG1) at superior or excellent, that is, levels 1 or 2:

Condition Statement 1: HARV-VIG1=1 OR HARV-VIG1=2

In the case of maximum harvest vigor (HARV-VIG2) he is willing to accept values through 3. Rather than express each of these values separately, he establishes a range of acceptable values. Since both conditions must apply, the greater than and less than values are joined by AND instead of OR:

Condition Statement 2: HARV-VIG2 > 0 AND HARV-VIG2 < 4

Because John Smith wants the materials selected on the basis of either an acceptable minimum or an acceptable maximum harvest vigor--both conditions need not be present for a plant to be selected--these two statements are combined into an OR statement. An OR statement is always introduced by AND and enclosed in a parenthesis, as indicated below:

AND (Condition Statement 1 OR Condition Statement 2)

The first condition statement is then entered just as it is shown above. Because its two elements form a single unit (Condition Statement 1), they must be placed within a set of parentheses. As a result, the statement now has two sets of parentheses, as follows:

```
AND ((HARV-VIG1=1 OR HARV-VIG1=2) OR Condition Statement 2)
```

The second condition statement is now entered, again just as it is shown on the preceding page. The two elements of this statement also form a single unit (Condition Statement 2) and also are enclosed within a set of parentheses. This first AND statement is now complete. Notice that it has three complete sets of parentheses, as follows:

```
AND ((HARV-VIG1=1 OR HARV-VIG1=2) OR (HARV-VIG2>0 AND HARV-VIG2<4))
```

John now wishes to specify a particular species of NC7-BRASSICA as a required condition. His major research area is field mustard, species *napus*. He will place *napus* in a new and separate AND statement. Since the value is a name and not a numerical value, he remembers to enclose it with quotation marks. In this case single quotation marks are used. Either single or double quotes will work as long as you are consistent around each word:

```
AND SPECIES = 'NAPUS'
```

Although John's major interest is in plants whose source is India, he is also willing to accept plants from Turkey.

On some of the earlier data printouts, John noticed that Turkey appeared as TURKY. This spelling is used as an abbreviated five-letter code to specify Turkey as a source country for NC7-BRASSICA. Since the designation for Turkey--or any other country for that matter--may vary from crop to crop, it is important to locate the proper form to be used in your search.

At the present time, countries are not listed in the COGS information about SOURCE. Until this information is included, you must find the proper form by looking through data reports which list specific sources until you find the country you want. This process is cumbersome, and eventually it will be corrected, but for the present it is the only way to locate the proper abbreviations for countries.

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Some sites, W-6 in addition to NC-7 for example, have SOURCE as a descriptor in their evaluation data. These SOURCE fields, like any other descriptor field, may differ in the size and range of acceptable values. The country India may be represented as IND, INDIA, India, or some other code depending of the way it is specified by the maintenance site.

Standardized GRIN origin and acquisition country names are stored with the accession data, rather than the evaluation (Observation) records. Specifically, they are located in the GEOPOLITICAL-ORIGIN-RECORD and the GEOPOLITICAL-ACQUIRE-RECORD. The country names used in these records is spelled correctly and require entry using an initial capital letter followed by lower case letters enclosed in quotations: GEOO-COUNTRY = "Turkey" or GEOO-COUNTRY = "India".

Information acquired from these records has the advantage of making a precise distinction between the countries of origin and of acquisition while SOURCE may not be as precise. Selecting data based on the accession records, however, requires that you use another process. This process will be explained in the TUTORIAL in Case Problem 4 and in the MISC option of DATA in the DATA SELECTION section of the manual (Page V-37).

Since John wants a plant selected if its SOURCE is either India or Turkey, he uses another OR statement. Because he wants SOURCE to be one of the required specifying conditions, John once again precedes the statement with AND. He also remembers to enclose the names in quotation marks. In this case, double quotation marks are used. Remember, you can use either single or double quotes provided you are consistent:

AND (SOURCE = "TURKY" OR SOURCE = "INDIA")

John decides that he wants to work only with annuals and with those materials which yield at least an 80% stand when planted. The descriptor name and values are available in the COGS descriptor list or through option DST in DATA. These are entered as individual AND statements. Notice that letters require the quotation marks while numerals do not:

AND LIFE-CYC = 'AN'

AND PCT-STND > 80

Finally, John is interested in plants that have a maximum height between 50 and 120 cm. His final **AND** condition will be expressed as two independent statements since both must apply in order for selection to take place. In order to establish the range between 50 and 120, John must state the conditions as greater than 49 **AND** less than 121, as shown:

AND PLT-HGT2 > 49 AND PLT-HGT2 < 121

AND statements are individual statements, each of which must be satisfied in order for selection to take place. Here we show them on one line because they treat the same general condition, that of plant height.

GRIN, however, tests each record separately and equally for both measurements just as it does with life cycle and percent stand above. If either one of the conditions is not satisfied, the record will not be selected.

John now has specified all the conditions he feels are necessary for selection. Each has been expressed in an **AND** statement. Two of these **AND** statements contain **OR** choices, the satisfaction of either allows the selection of a plant record.

If you are following John's process exactly, you should have no problems with the next step. If, however, you are developing your own specifications for another crop, you may have a variety of problems.

Don't despair. It took eight attempts to enter John's conditions correctly, but we finally did it. The next few paragraphs summarize some of our errors. Perhaps they will help you.

POTENTIAL PROBLEMS:

In addition to the usual problems with form--entering inaccurate descriptor labels or improperly positioning **AND**, **OR**, or ()'s, for example--you might inadvertently build a logical fallacy into your program.

If, for example, John had specified plant height at less than 49 **AND** greater than 121, the program would not be able to find any specimens to meet the criteria. No specimen can possibly measure less than 49 **and** greater than 121 cm. in height at the same time.

Since an AND condition statement requires that all of the criteria stated in the condition be met for selection to take place, the program would find no NC7-BRASSICA plants that meet the conditions of this particular statement and, therefore, of the entire program. Although John Smith would not intentionally state a condition in this way, he might do so in error.

On the other hand, if John had specified plant height at greater than 49 OR less than 121, all specimens would meet at least one of the two criteria. As a result, unlike the situation in the preceding statement, every specimen would qualify for selection. A condition statement expressed in this way would be meaningless. Final selection, of course, would depend on a plant material meeting the conditions specified in any other AND statement as well as this one.

Unfortunately, when mistakes of this kind are made, GRIN cannot recognize the error. It simply goes along its merry way, assuming the programmer knows what he or she is doing and selects any and all plants which meet the conditions specified.

Remember, GRIN does not select the criteria; only the user does this. GRIN cannot think. It is important, therefore, that you think carefully through the logic of your program as well as check the accuracy of the typed entry.

In addition, it is important that you verify the exact spelling of the descriptor labels and the range of values available for each descriptor category so that you enter a condition which is possible.

Finally, after the records have been selected, check the data carefully to be certain that the records selected actually satisfy your criteria. If they do not, it is quite possible that a logical mistake was made in stating the conditions.

John is now ready to enter his conditions into the GRIN system. If he EXITed the system following the preceding case study, he must first LOGIN again. If you need help, refer to the Summary of LOGIN procedures (Page VII-1). After logging in, review the process for displaying the appropriate menus to reach the NC7-BRASSICA collection (Pages III-14 through 16).

After displaying the NC-7 Crop Evaluation Query Menu, John again enters NC3 which designates the NC7-BRASSICA crop, and lists his conditions, as follows:

> NC3 <return>

Enter AND and conditions, or <cr>. Maximum 160 characters

>> AND ((HARV-VIG1=1 OR HARV-VIG1=2) OR (HARV-VIG2>0 AND HARV-VIG2<4)) AND SPECIES = 'NAPUS' <return>

continue conditions or <cr>

>> AND (SOURCE = 'INDIA' OR SOURCE = 'TURKY') AND LIFE-CYC = "AN" AND PCT-STND >80 <return>

continue conditions or <cr>

>> AND PLT-HGT2>49 AND PLT-HGT2<121 <return>

Table DATA already exists. Do you wish to overwrite it? Y <return>

{If you just logged into the system, you will not receive the above message. It does not appear during the first selection process.}

Virtual record count: 1 2 3 4

Total number of virtual records: 4

Enter DISPLAY USING NC7-BRASSICAn where n is the report number 1 thru 5
>>

John divides his conditions among the three opportunities provided for entering them. He keeps in mind that no command line should exceed 160 characters, which is approximately 2 lines on his video monitor.

Notice above that the first line requesting conditions continues automatically on to the second one. In the first entry above, "HARV-VIG2" is not actually divided as it appears. The GRIN command line allows for 160 characters rather than the 80 characters permitted on most video screens. The command unit, therefore, which may be up to 160 characters long, occupies up to two lines on most video terminals.

John is careful to keep separate command units together and ends each line well before the 160 characters per command line that GRIN allows.

John could have put more information on each line. The three opportunities to enter conditions, however, usually provide more than enough space to enter even the most complex set of conditions. For purposes of "debugging", that is looking for errors in your program or entry, it is better to divide the material evenly over the three lines and keep separate units together.

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After all of the conditions are entered and John agrees again to overwrite Table DATA, the selection process begins.

The next line (Virtual Record Count:) will not appear until the first record is selected. In this particular case the process requires what seems like a long initial wait. The count for the first three records is displayed in rapid sequence--1 2 3--followed by another wait for record 4 followed by another wait before "Total number of virtual records: 4" appears, and signifies the conclusion of the process.

Even though only 4 records are selected as having met the conditions, GRIN had to sift through the same 845 NC7-BRASSICA records in order to find them. Unlike the earlier procedures in which we could see fairly constant activity (1 through 466 or 1 through 144), this process seems slower because GRIN only informs us when it finds one of the four records which meet all of the criteria.

Now John has the opportunity to display data about each of the records selected. The "Enter DISPLAY USING NC7-BRASSICAn where n is the report number 1 thru 5" message does not always appear. Sometimes only a > prompt appears. In either case, John may specify whatever information he wants.

John begins by requesting a list of the identification numbers. Notice that the first three are in close numerical sequence while the fourth occurs much later. This arrangement explains the rapid display of numbers 1, 2, and 3 and the subsequent wait for number 4 during the selection process.

Enter DISPLAY USING NC7-BRASSICAn where n is the report number 1 thru 5
>> DISPLAY ONLY OBS-ACC-ID <return>

OBS-ACC-ID

PI 169075
PI 169080
PI 169081
PI 271452

Since John now has only four specimens to consider, he wants to see all of the information available for each of them. You may not want to run through all of this information, but if you have difficulty understanding GRIN, do it for practice.

On the following page you will find the proper command and the first and last pages of seven screens of data. If you wish to run through all of them, use the carriage return. If you wish to stop, use Control-P.

Displaying the data currently available is easy. Simply enter **DISPLAY**:

> **DISPLAY** <return>

```
OBSERVATION-RECORD.OBS-ACC-ID  PI  169075
OBSERVATION-RECORD.OBS-IDENT    1
OBSERVATION-RECORD.OBS-DSCODE   13
OBSERVATION-RECORD.GRW-HAB2     0
OBSERVATION-RECORD.GRW-HAB1     0
OBSERVATION-RECORD.DYS-FLWR     0
OBSERVATION-RECORD.SDLG-VIG2    0
OBSERVATION-RECORD.SDLG-VIG1    0
OBSERVATION-RECORD.BLM-VIG2     1
OBSERVATION-RECORD.BLM-VIG1     1
OBSERVATION-RECORD.HARV-VIG2    1
OBSERVATION-RECORD.HARV-VIG1    1
OBSERVATION-RECORD.LEAF-NO1     0
OBSERVATION-RECORD.LEAF-NO2     0
OBSERVATION-RECORD.LEAF-SZ1     0
OBSERVATION-RECORD.LEAF-SZ2     0
OBSERVATION-RECORD.LEAF-RET2    0
OBSERVATION-RECORD.LEAF-RET1    0
OBSERVATION-RECORD.LEAF-TEXT1   0
OBSERVATION-RECORD.LEAF-TEXT2   0
OBSERVATION-RECORD.STEM-SZ1     0
OBSERVATION-RECORD.STEM-SZ2     0
OBSERVATION-RECORD.SEED-RET2    0
Enter <CR> to continue:  <return>
```

{ Five screens of data deleted here. }

```
OBSERVATION-RECORD.LEAF-TEXT1   0
OBSERVATION-RECORD.LEAF-TEXT2   0
OBSERVATION-RECORD.STEM-SZ1     0
OBSERVATION-RECORD.STEM-SZ2     0
OBSERVATION-RECORD.SEED-RET2    0
OBSERVATION-RECORD.SEED-RET1    0
OBSERVATION-RECORD.SEED-PROD2   1
OBSERVATION-RECORD.SEED-PROD1   1
OBSERVATION-RECORD.PCT-STND     100
-----
```

```

-----
OBSERVATION-RECORD.PLT-HGT1      0
OBSERVATION-RECORD.PLT-HGT2     120
OBSERVATION-RECORD.PI-NO        27145
OBSERVATION-RECORD.AVAIL        Y
OBSERVATION-RECORD.GENUS        BRAS
OBSERVATION-RECORD.SPECIES      NAPUS
OBSERVATION-RECORD.SOURCE      INDIA
OBSERVATION-RECORD.PLT-TYPE
OBSERVATION-RECORD.FLWR-COL
OBSERVATION-RECORD.FLWR
OBSERVATION-RECORD.LIFE-CYC      AN
OBSERVATION-RECORD.CULT-REM
>
-----

```

GRIN has retrieved most but not all of the information stored in the databank about each of these four plant materials. Other information, particularly accession information, requires other commands. This process will be described in Case Study 5 in the next section of this tutorial.

This information is valuable, but John would like to make comparisons among the four plant materials. He can display the data together in a horizontal table by asking for the five prepared reports for NC7-BRASSICA in sequence, several of which are shown here:

```

-----
> DISPLAY USING NC7-BRASSICA1 <return>

```

NC-7 Brassica Characteristic Data Report 1

ID NUMBER	IDENT	DSCDE	GRW HAB 2	GRW HAB 1	DAYS FLWR	SEEDG VIGOR2	SEEDG VIGOR1
PI 169075	1	13	0	0	0	0	0
PI 169080	1	13	0	0	0	0	0
PI 169081	1	13	0	0	0	0	0
PI 271452	1	13	0	0	0	0	0

```

> DISPLAY USING NC7-BRASSICA2 <return>

```

NC-7 Brassica Characteristic Data Report 2

ID NUMBER	BLOOM VIGOR2	BLOOM VIGOR1	HARV VIGOR2	HARV VIGOR1	LEAF NUM1	LEAF NUM2	LEAF SIZE1	LEAF SIZE
PI 169075	1	1	1	1	0	0	0	
PI 169080	0	0	1	1	0	0	0	
PI 169081	0	0	1	1	0	0	0	
PI 271452	0	0	1	1	0	0	0	

```

-----

```

> DISPLAY USING NC7-BRASSICA5 <return>

NC-7 Brassica Characteristic Data Report 5

ID NUMBER	SOURCE	PLT TYP	FLOWER COLOR	FLR	LF CY	CULTIVAR	REMARKS
PI 169075	TURKY				AN		
PI 169080	TURKY				AN		
PI 169081	TURKY				AN		
PI 271452	INDIA				AN		

> DISPLAY USING NC7-BRASSICA6 <return>

There is no public format named NC7-BRASSICA6.

Since there are only 5 reports describing NC7-BRASSICA, GRIN gives an error message in response to a request for report 6. If John had made a typing error in displaying report number 2, he would have received the same message. He would have to retype the message correctly to display the report.

John Smith now decides he wants to see only those characteristics in which he has a special interest. He uses the following command, only to receive an error message, as shown below:

> DISPLAY USING ONLY HARV-VIG1, HARV-VIG2, SPECIES, SOURCE, PCT-STND,
PLT-HGT2, LIFE-CYC <return>

ERROR:
"DISPLAY USING ONLY HARV-VIG1, HARV-VIG2, SPECIES, SOURCE, PCT-STND,

PLT-HGT2, LIFE-CYC"

Found ONLY; expected one of the following:
FORMAT PRIVate PUBLIC NAME

>

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For some reason GRIN underlines "ONLY" in this case rather than the offending word "USING." Although not precise, the position of the error is closely approximated. Even though editing requires a simple deletion of the word "USING," John Smith decides to retype the command, as follows:

```
-----
> DISPLAY ONLY HARV-VIG1, HARV-VIG2, SPECIES, SOURCE, PCT-STND,
    PLT-HGT2, LIFE-CYC      <return>
```

HARV-VIG1	HARV-VIG2	SPECIES	SOURCE	PCT-STND	PLT-HGT2	LIFE-CYC
1	1	NAPUS	TURKY	95	50	AN
1	1	NAPUS	TURKY	100	60	AN
1	1	NAPUS	TURKY	100	66	AN
1	1	NAPUS	INDIA	100	120	AN

```
-----
```

Notice that John forgot to include the identification number and retypes again:

```
-----
> DISPLAY ONLY OBS-ACC-ID, HARV-VIG1, HARV-VIG2, SPECIES, SOURCE,
    PCT-STND, PLT-HGT2, LIFE-CYC      <return>
```

OBS-ACC-ID	HARV-VIG1	HARV-VIG2	SPECIES	SOURCE	PCT-STND	PLT-HGT2	LIFE-CYC
PI 169075	1	1	NAPUS	TURKY	95	50	AN
PI 169080	1	1	NAPUS	TURKY	100	60	AN
PI 169081	1	1	NAPUS	TURKY	100	66	AN
PI 271452	1	1	NAPUS	INDIA	100	120	AN

```
-----
```

He decides to add two new categories (BLM-VIG1 and 2) and this time uses the edit procedure. After filing the change, he discovers that he has entered too many categories for a horizontal display. It would exceed the screen size so the data is displayed vertically, as shown:

>ED <return>

--- Edit Mode ---

: N
1: DISPLAY ONLY OBS-ACC-ID, HARV-VIG1, HARV-VIG2, SPECIES,
SOURCE, PCT-STND, PLT-HGT2, LIFE-CYC

: C/2, SP/2, BLM-VIG1, BLM-VIG2, SP/ <return>
1: DISPLAY ONLY OBS-ACC-ID, HARV-VIG1, HARV-VIG2, BLM-VIG1,
BLM-VIG2, SPECIES, SOURCE, PCT-STND, PLT-HGT2, LIFE-CYC

{NOTE: In order to enter the bloom vigor conditions between HARVIG2 and SPECIES, you have only to designate enough text to identify the proper location. The 2 from the end of HARV-VIG2 is the first 2 which is encountered on the line and it is followed by a comma, a space, and the initial S in species: 2, S. This is shown as the old text, and the new text is inserted in the appropriate space between, as shown above. When you are certain that the correction is accurate, FILE it.}

: FILE <return>
> DISPLAY ONLY OBS-ACC-ID, HARV-VIG1, HARV-VIG2, BLM-VIG1,
BLM-VIG2, SPECIES, SOURCE, PCT-STND, PLT-HGT2, LIFE-CYC

OBS-ACC-ID PI 169075
HARV-VIG1 1
HARV-VIG2 1
BLM-VIG1 1
BLM-VIG2 1
SPECIES NAPUS
SOURCE TURKY
PCT-STND 95
PLT-HGT2 50
LIFE-CYC AN

OBS-ACC-ID PI 169080
HARV-VIG1 1
HARV-VIG2 1
BLM-VIG1 0
BLM-VIG2 0
SPECIES NAPUS
SOURCE TURKY
PCT-STND 100
PLT-HGT2 60
LIFE-CYC AN

OBS-ACC-ID PI 169081
Enter <CR> to continue: <return>

HARV-VIG1	1
HARV-VIG2	1
BLM-VIG1	0
BLM-VIG2	0
SPECIES	NAPUS
SOURCE	TURKY
PCT-STND	100
PLT-HGT2	66
LIFE-CYC	AN
OBS-ACC-ID	PI 271452
HARV-VIG1	1
HARV-VIG2	1
BLM-VIG1	0
BLM-VIG2	0
SPECIES	NAPUS
SOURCE	INDIA
PCT-STND	100
PLT-HGT2	120
LIFE-CYC	AN

>

John now has displayed the information GRIN has available about each of these plant materials in several ways. He still is not satisfied. He knows that more information is available, and he wants to retrieve it.

He may again choose to take a break and do the next case study later. Remember, type **QUIT** and respond **Y** to the question of whether or not you want to terminate the Session. The GRIN FUNCTIONS menu will be displayed, and you may **EXIT**.

Tutorial Case Study 4

Locating All Information for a Particular Identification Number

John has identified four plants which meet his criteria. He wants to look at all of the information GRIN has about them. The data he displayed in the preceding section of this manual represents a large part of the available information but not all of it. Certain records cannot be retrieved through EVAL.

In order to locate all of the information GRIN makes available to the public user, John logs on again. See **SUMMARIES** (Page VII-1) if you need to review the login process. He enters **DATA**:

FUNCTION CODE: **DATA** <return>

Or, if John did not **EXIT** after the Case Study 3, he returns to the GRIN QUERY MENU (**DATA**) menu by entering **MENU**:

>**MENU** <return>

And the GRIN QUERY MENU is displayed, as shown below:

GRIN QUERY MENU OPTIONS

OPTIONS	ACTIONS
ACC	GRIN Passport data selections
COOP	GRIN Cooperator selections
EVAL	GRIN Crop Evaluation data selections
DST	GRIN Dataset descriptions
MISC	Create your own ad hoc selection
PRIM	PRIMOS utilities and status commands
SAV	SAVe your query output to PRIMOS level. First SAVed file called DATA. You name 2nd thru Nth
INIT	Initialize these menus and procs following error

MENU=Redraw this menu HOW=Short Instruction QUIT=Terminate session
VERSION 2.0

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Then, as shown below, John selects the **MISC** option which will allow him to retrieve the additional information he seeks:

```
>MISC      <return>
                                AD HOC SELECTION ASSISTANCE MENU

OPTION      ACTION INITIATED

M1          Lists the SUBSCHEMAS of SCHEMA GRIN1-0

M2          Lists the RECORDS of a SUBSCHEMA you choose. Enter:
M2 subschema-name <cr>. Example: M2 CPUBLIC <cr>

M3          Executes a query prompting for SUBSCHEMA, variables
            and target RECORD name.

MENU        Back up to main menu          QUIT  Terminate query session

VERSION     2.0
>
```

The first two options (**M1** and **M2**) provide general information: the subschema format and a list of specific records. See **MISC** under **DATA** in the **DATA SELECTION** section of this manual for more information (Pages V-35 and 36).

The third option, **M3**, provides an opportunity to ask for additional information, in John Smith's case about the four **NC7-BRASSICA** plants selected in the preceding Case Study. The help provided by this option is a simplified version of the "ad-hoc query" program described in **COGS** on the initial pages of each crop report. See the **COGS** Report on Page III-5 of this manual.

Since John is interested in retrieving as much information as possible about the four plant materials selected in the last Case Study, he begins by entering **M3** and then follows the prompts, as shown below:

```
> M3  <return>

Enter subschema name>> NC7-BRASSICA    <return>

Enter ALL or specific descriptor names separated by commas
>> ALL  <return>

Enter GRIN Record-name  >> OBSERVATION-RECORD  <return>
```

John has specified that he wants ALL descriptor information from the **OBSERVATION-RECORD**. Next, he will enter the PI number for one of the four plants selected in the preceding case study.

Enter WHERE and conditions (max 160 chars) or <cr>

>> **WHERE ACC-PRIMARY-IDENTIFIER EQ 'PI 271452' <return>**

{Notice, there are two spaces between PI and the number. This spacing must be preserved exactly. Entering identification numbers is discussed in the ACC option of **DATA** (Page V-3).}

continue conditions or <cr>

>> **<return>**

continue conditions or <cr>

>> **<return>**

{If you asked to overwrite Table **DATA**, answer yes. Also, if you receive a message after the record count that the terminal is too small, respond with the following: **>SET TERM WIDTH 132 }**

Virtual record count: 1

Total number of virtual records: 1

ACCESSION-RECORD.ACC-PRIMARY-IDENTIFIER	PI 271452
ACCESSION-RECORD.ACC-SUBSPECIES	
ACCESSION-RECORD.ACC-VARIETY	
ACCESSION-RECORD.ACC-CULTIVAR	
ACCESSION-RECORD.ACC-COMMON-NAME	
ACCESSION-RECORD.ACC-DATE-RECEIVED	
ACCESSION-RECORD.ACC-DATE-RELEASED	
ACCESSION-RECORD.ACC-ENTRY-LOGONID	JAS
ACCESSION-RECORD.ACC-PRIMARY-SUPPLY-SITE	NC-7
ACCESSION-RECORD.ACC-INV-ID	UNKNOWN
ACCESSION-RECORD.ACC-DATE-ENTERED	OCT 8, 1982
ACCESSION-RECORD.ACC-DATE-PI-ASSIGNED	
ACCESSION-RECORD.ACC-DATE-TAXON-ASSIGNED	
ACCESSION-RECORD.ACC-ATTRIBUTE-FLAG	NO
ACCESSION-RECORD.ACC-PIO-APPROVED-FLAG	NO
ACCESSION-RECORD.ACC-PIO-DONOR-HELD-FLAG	NO
ACCESSION-RECORD.ACC-PIO-CROP-CATEGORY	NONE
ACCESSION-RECORD.ACC-PIO-LIFE-FORM	UNKNOWN
ACCESSION-RECORD.ACC-PIO-FORM-RECEIVED	UNKNOWN
ACCESSION-RECORD.ACC-PIO-IMPROVEMENT-STATUS	UNKNOWN
ACCESSION-RECORD.ACC-PEDIGREE	
DATASET-RECORD.DATASET-QUERY-NAME	NC7-BRASSICA
DATASET-RECORD.DATASET-NAME	NC-7 Brassica

Enter <CR> to continue: **<return>**

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```

-----
DATASET-RECORD.DATASET-SITE                NC-7
DATASET-RECORD.DATASET-CODE                13
DATASET-RECORD.DATASET-ITEM-COUNT          36
DATASET-RECORD.DATASET-OBS-COUNT           845
DATASET-RECORD.DATASET-STORAGE-AREA        AREV1
DATASET-RECORD.DATASET-NARR-COUNT          5
DATASET-RECORD.DATASET-NARRATIVE           Contains characteristic
                                         data on Brassica accessions. The data were
DATASET-RECORD.DATASET-NARRATIVE           collected by the North
                                         Central Regional Plant Introduction Station
DATASET-RECORD.DATASET-NARRATIVE           (NC-7) in Ames, Iowa.
                                         For additional information on where, when and
DATASET-RECORD.DATASET-NARRATIVE           how the evaluations were
                                         conducted, please contact the curator of the
DATASET-RECORD.DATASET-NARRATIVE           collection.
DATASET-RECORD.DATASET-CAC-FLAG            NO
ENVIRONMENT-RECORD.ENV-DATE-PLANTED
ENVIRONMENT-RECORD.ENV-DATE-HARVESTED
OBSERVATION-RECORD.OBS-ACC-ID              PI  271452
OBSERVATION-RECORD.OBS-IDENT               1
OBSERVATION-RECORD.OBS-DSCODE              13
OBSERVATION-RECORD.GRW-HAB2                0
OBSERVATION-RECORD.GRW-HAB1                0
OBSERVATION-RECORD.DYS-FLWR                0
OBSERVATION-RECORD.SDLG-VIG2               0
OBSERVATION-RECORD.SDLG-VIG1               0
Enter <CR> to continue: <return>

OBSERVATION-RECORD.BLM-VIG2                0
OBSERVATION-RECORD.BLM-VIG1                0
OBSERVATION-RECORD.HARV-VIG2               1
OBSERVATION-RECORD.HARV-VIG1               1
OBSERVATION-RECORD.LEAF-NO1                0
OBSERVATION-RECORD.LEAF-NO2                0
OBSERVATION-RECORD.LEAF-SZ1                0
OBSERVATION-RECORD.LEAF-SZ2                0
OBSERVATION-RECORD.LEAF-RET2               0
OBSERVATION-RECORD.LEAF-RET1               0
OBSERVATION-RECORD.LEAF-TEXT1              0
OBSERVATION-RECORD.LEAF-TEXT2              0
OBSERVATION-RECORD.STEM-SZ1                0
OBSERVATION-RECORD.STEM-SZ2                0
OBSERVATION-RECORD.SEED-RET2               0
OBSERVATION-RECORD.SEED-RET1               0
OBSERVATION-RECORD.SEED-PROD2              1
OBSERVATION-RECORD.SEED-PROD1              1
OBSERVATION-RECORD.PCT-STND                100
OBSERVATION-RECORD.PLT-HGT1                0
OBSERVATION-RECORD.PLT-HGT2                120
OBSERVATION-RECORD.PI-NO                   27145
OBSERVATION-RECORD.AVAIL                   Y
Enter <CR> to continue: <return>
-----

```

```
-----
OBSERVATION-RECORD.GENUS          BRAS
OBSERVATION-RECORD.SPECIES        NAPUS
OBSERVATION-RECORD.SOURCE        INDIA
OBSERVATION-RECORD.PLT-TYPE
OBSERVATION-RECORD.FLWR-COL
OBSERVATION-RECORD.FLWR
OBSERVATION-RECORD.LIFE-CYC      AN
OBSERVATION-RECORD.CULT-REM
FAMILY-RECORD.FAMILY-NAME        Brassicaceae
FAMILY-RECORD.FAMILY-AUTHORITY
FAMILY-RECORD.FAMILY-PIO-CODE    0033
GENUS-RECORD.GENUS-NAME          Brassica
GENUS-RECORD.GENUS-AUTHORITY
GENUS-RECORD.GENUS-PIO-CODE      0200
SPECIES-RECORD.SPECIES-NAME      napus
SPECIES-RECORD.SPECIES-AUTHORITY L.
SPECIES-RECORD.SPECIES-PIO-CODE  1719
GEOPOLITICAL-ACQUIRE-RECORD.GEOA-COUNTRY India
GEOPOLITICAL-ACQUIRE-RECORD.GEOA-STATE
GEOPOLITICAL-ACQUIRE-RECORD.GEOA-PIO-CODE 455
GEOPOLITICAL-ORIGIN-RECORD.GEOO-COUNTRY UNKNOWN
GEOPOLITICAL-ORIGIN-RECORD.GEOO-STATE
GEOPOLITICAL-ORIGIN-RECORD.GEOO-PIO-CODE
Enter <CR> to continue: <return>
>
-----
```

GRIN has selected a considerable amount of additional information available about identification number PI 271452. In addition to repeating the observation records displayed earlier, it provides information which may be displayed in a variety of formats from the following records:

```
ACCESSION-RECORD,
DATASET-RECORD,
ENVIRONMENT-RECORD,
FAMILY-RECORD,
GENUS-RECORD,
SPECIES-RECORD,
GEOPOLITICAL-ACQUIRE-RECORD (Acquisition information),
GEOPOLITICAL-ORIGIN-RECORD.
```

The original accession record may be displayed, as follows:

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> DISPLAY USING ACCESSION <return>

GRIN Accession Record Review

PI 271452 Supply Site: NC-7 Inv. Id: UNKNOWN

Taxon: Brassica napus

Sub-species:

Variety:

Cultivar:

Comn name:

P:

Acquisition ctry: India

Origin ctry: UNKNOWN

Date rec'd:

Date released:

Date entered: OCT 8, 1982 Entered by: JAS

Date PI assigned:

Date taxon assigned:

PIO approved: NO Attributes: NO Donor/Collector flag: NO

PIO crop category: NONE PIO life form: UNKNOWN

PIO form received: UNKNOWN PIO Improvement status: UNKNOWN

>

The same five NC7-BRASSICA Reports may be displayed from this program just as they were earlier. If you adjusted the terminal width to 132 earlier--and even if you didn't--you might have to adjust terminal width for proper alignment on the screen if the display is offset, something like the one shown below:

> DISPLAY USING NC7-BRASSICAL <return>

NC-7 Brassica Characterist

AYS	SEEDG	SEEDG	ID NUMBER	IDENT	DSCDE	GRW
LWR	VIGOR2	VIGOR1				HAB2
			PI 271452	1	13	0
0	0	0				

>

Use SET TERM WIDTH to properly position the material on your screen and repeat the display request, as follows:

SET TERM WIDTH <return>

DISPLAY USING NC7-BRASSICAL <return>

NC-7 Brassica Characteristic Data Report 1

ID NUMBER	IDENT	DSCDE	GRW HAB 2	GRW HAB 1	DAYS FLWR	SEEDG VIGOR2	SEEDG VIGOR1
PI 271452	1	13	0	0	0	0	0

Each of the five report formats (NC7-BRASSICA Report 1 through Report 5) may be displayed in sequence by designating the desired report number.

John now has most of the important information which is available about NC7-BRASSICA; however, there is some information in the databank which may be retrieved only through specific commands; for example, supplemental data not available through the general request, including information about the breeder, collector, and donor; the date and locality in which the plant was collected; and the curatorial or supply site. Also, space for additional information in narrative form is provided.

Since John Smith is already in NC7-BRASSICA, the information may be obtained by a simple request for the Supplemental Record. Notice the abbreviations used in this command: SE for Select; DI for Display; WH for Where; and EQ for = or Equal. Also notice the two spaces between PI and the numerals and the pair of single quotation marks. Enter the command, as follows: (If you receive a default message here, respond with SET TERM WIDTH 132 and repeat the select and display command.)

>SE AND DI FROM ACC-SUPPLEMENTAL-RECORD WH ACC-PRIMARY-IDENTIFIER EQ
'PI 271452' <return>

(Warning) Table is empty

This message really means that no supplemental information is available for the requested identification number, although we checked carefully to be certain that our entry was correct. No supplemental information is available for any of the four plants John Smith is examining. If the supplemental record had been available, it would have looked something like the display on the next page.

ACC-SUPPLEMENTAL-RECORD
ACC-SUPP-LABEL

ACC-SUPPLEMENTAL-RECORD
ACC-SUPP-LINE

orins	Lab. of Vegetable, Inst. of Hort.
orcsp	Shanghai
coldte	800816
recthru	The 1980 US Plant Germplasm Team
recthru	to Peoples Republic of China.
narr	Leaves long, slender, Petioles thick,
narr	white at harvest (50-60 days),
narr	Local open-pollinated type, Local
narr	name Feather leaf (Bok Choy)
currec	D. R. Dewey, USDA, Utah State Univ,
currec	Logan, UT 84322, T.J. Orton,
currec	Agrigenetics Corp., 3375 Mitchell
currec	Lane, Boulder, CO 80301
eor	0000478324
nor	002

The left column lists the codes or labels which identify the kind of information provided in the right column. The above sample shows only some of the areas in which supplemental information may be entered. For addition information about various records including the **ACC-SUPPLEMENTAL-RECORD**, see the Appendix.

Another record which is important is the **COOPERATOR-RECORD**. The **COOPERATOR-RECORD** may be retrieved through the **DONOR-LINK-RECORD**. John Smith can ask for this information, as follows:

```
> SE AND DI COOPERATOR-RECORD FROM DONOR-LINK-RECORD WH ACC-PRIM
ARY-IDENTIFIER EQ 'PI 271452'      <return>
```

(Warning) Table is empty.

Again, there is no information in this record for the plants in which John Smith is interested. Had it been available, the **COOPERATOR-RECORD** would have looked something like the one on the next page:


```
-----
ACC-PRIMARY IDENTIFIER                PI  64698
COOPERATOR-RECORD, COOPERATOR-LAST-NAME  TAMARI
COOPERATOR-RECORD, COOPERATOR-FIRST-NAME  K.
COOPERATOR-RECORD, COOPERATOR-ORGANIZATION KAGOSHIMA IMP. AGR&FOR
COOPERATOR-RECORD, COOPERATOR-ADDRESS-1
COOPERATOR-RECORD, COOPERATOR-ADDRESS-2
COOPERATOR-RECORD, COOPERATOR-ADDRESS-3
COOPERATOR-RECORD, COOPERATOR-CITY        KAGOSHIMA
COOPERATOR-RECORD, COOPERATOR-STATE
COOPERATOR-RECORD, COOPERATOR-ZIP
COOPERATOR-RECORD, COOPERATOR-COUNTRY    JAPAN
COOPERATOR-RECORD, COOPERATOR-PHONE
COOPERATOR-RECORD, COOPERATOR-REGION
COOPERATOR-RECORD, COOPERATOR-ID-NUMBER   0
COOPERATOR-RECORD, COOPERATOR-UPD-LOGON  JANSEN
COOPERATOR-RECORD, COOPERATOR-UPD-DATE   OCT 24, 1984
COOPERATOR-RECORD, COOPERATOR-STATUS     NEW
COOPERATOR-RECORD, COOPERATOR-CLASS      IDC
>
-----
```

Two other records might also be important, but again for John Smith, they are empty. They are the **ACC-REID-RECORD** and the **SECONDARY-IDENTIFIER-RECORD**.

The **ACC-REID-RECORD** lists taxonomic information which has been changed together with the name or names of the cooperators making the changes. This information, if it is available, could be important to a thorough understanding of the characteristics of the genetic material.

The **SECONDARY-IDENTIFIER-RECORD** gives local identification numbers. These are particularly important for plants which have been given plant inventory (PI) designations for the purposes of the National Plant Germplasm System (NPGS) but are still known locally by other designators; for example, NSSL and AMES numbers.

The GRIN Data Model schematic in the **APPENDIX** may help you gain a better understanding of the ownership relations and connections among various records in the databank. If you have difficulty locating information you need, contact a member of the Database Management Unit (DBMU) team for help.

Listed on the next page are the names of the data records available to public users through the "Select and Display FROM" formats shown above. In some cases, as indicated, the information found in these records is available through one of the **EVAL** special options.

DATA RECORDS AVAILABLE TO PUBLIC USERS

See DATA SELECTION (Section V) of this manual for more information.

OBSERVATION-RECORD	
ACCESSION-GROUP-RECORD	
ACC-REID-RECORD	
BINOMIAL-SYNONYM-RECORD	
ACC-SUPPLEMENTAL-RECORD	
ENV-NARRATIVE-RECORD	(SUPP. TO ENVIRON RECORD)
SECONDARY-IDENTIFIER-RECORD	
DESCRIPTOR-RECORD	(AVAIL THRU DST)
CODE-RECORD	(AVAIL THRU DST)
COOPERATOR-RECORD	(AVAIL THRU COOP)
COOP-GROUP-RECORD	(AVAIL THRU COOP)
MEMBERSHIP-RECORD	(AVAIL THRU COOP)
DONOR-LINK-RECORD	
SUPPLY-SITE-RECORD	(AVAIL THRU EVAL)

A complete printout describing the parts of each of these records may be found in the APPENDIX. In addition to these records, certain information is stored which is available only to the curators of selection sites. Information about generic orders, crop sites, various inventory, and suppliers, for example, currently must be obtained by writing to the curator of the site which houses the crop in which you are interested.

John now has all the information he needs about PI 271452 and is satisfied. Before he leaves the system, however, he wants to know about the INFO option which provides an alternative way of reselecting data. INFO is particularly useful for a researcher who has some experience with database systems and wants to look at a large number of records in a variety of ways.

Again, you have the option to QUIT (Respond "yes" to the question about terminating the Session) and return to the main GRIN FUNCTIONS Menu where you may EXIT and rest before going on to the final Case Study in this Tutorial.

Tutorial Case Study 5

SAVing and VICing; RESELECTing Data Using INFO

Nearly any data can be selected using the processes discussed in the preceding case studies. If you would like to look at a particular collection of data in many ways, however, you might find the **INFO** system helpful.

INFO permits you to process and reprocess the same datasets repeatedly. For example, through a series of **RESELECTs**, you may gradually narrow focus on the **NC7-BRASSICA** collection to the same four plants John Smith located by the methods described earlier in Case Study, Problem 3.

INFO has three distinct advantages over the earlier method. First, if the collection you are researching is very large--more than 1,000 records--or if you plan five or more separate selection procedures, **INFO** usually performs more rapidly than the **DATA** procedures you used earlier.

Second, entering descriptor conditions one by one allows you to keep track of how many plants meet the conditions specified at each step of the process. You may also display information about the characteristics of the selected plants at each step. Third, if you make an error or want to go back to the original dataset, you can do so with a single **ASELECT** command.

On the other hand, preparing to use **INFO** requires a considerable investment of time. First, you must select the initial dataset using the earlier method, then save and transfer it into **INFO** before beginning the reselection processes. Unless you plan rather extensive work with a dataset, **INFO** might not be worth the effort.

NOTE: The **INFO** system has its own set of procedures and commands which are outlined in a separate manual, the **INFO PRIMER**. Anyone planning extensive use of **INFO** should request a copy of the **INFO PRIMER** from the DBMU manager. See Introduction of this manual (Page I-2) or the GRIN LOGIN messages for an address. If you are familiar with information processing concepts, the **HELP** Command which is available after you enter **INFO** might also provide the information you need.

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In the following Case Study, John Smith will select two groups of Brassica datasets (NC7-BRASSICA and S9-BRASSICA) through the EVAL section of DATA--just as he did earlier. He will then save them in two separate files, transfer them into INFO, and perform a few simple selection procedures.

First, the two Brassica datasets must be selected and saved. Up to this point John Smith has not saved any of his information. He has discarded each group of data selected before collecting the next one. He begins now by entering the EVAL option of DATA, selecting first the NC-7, Ames, Iowa, collection site (S2), followed by the Brassica crop (NC3). A summary of these commands is shown in sequence below:

```
> DATA      <return>
> EVAL       <return>
> S2         <return>
> NC3        <return>
```

After John enters NC3 --allowing for the usual short pause-- he receives three requests to specify conditions. He enters a carriage return following each request. These carriage returns tell GRIN, in effect, that no conditions should be imposed upon the selection process. As a result, all of the approximately 845 NC7-BRASSICA records are selected. The procedures described here are no different from those used earlier to select data, except that no conditions are specified.

> NC3 <return>

{Pause often occurs here. }

Enter AND and conditions, or <cr>. Maximum 160 characters
>> <return>

continue conditions or <cr>
>> <return>

continue conditions or <cr>
>> <return>

```
Virtual record count 1 . . . 841
Total number of virtual records: 841
```

```
Enter DISPLAY USING NC7-BRASSICA where n is the report number 1 thru 5
> <return>
```

NOTE: Notice that NC7-BRASSICA now has only 841 records. Although GRIN usually grows rather than diminishes in size, the system is dynamic, allowing records to be removed as well as added. Also, if you are satisfied with a part of the total number of records, you may use Control-P at any time to stop the selection process. Some collections have thousands of records. You might prefer to work with a lesser number.

Since John wants to SAVE instead of display the data, he merely enters a carriage return in order to get the single prompt (>). The single prompt allows him to enter SAV which instructs GRIN to write the data into a Public file called DATA.

Entering SAV does not erase the NC7-BRASSICA data just collected. After saving the data, John can execute appropriate display commands just as he could have done before saving it. SAVING, however, insures that the data will be available for transfer into INFO later in the same session.

NOTE: Once John interrupts his communication with GRIN, all of his information, including his saved information, is no longer easily available. A DBMU team member might be able to help you retrieve information left behind when you exit the system. Be certain to save it to a file and remember the file name. DBMU will need it.

John wants to transfer the information he just selected into INFO; therefore, he uses the SAV command, as follows:

```
> SAV <return>
```

```
Table DATA saved to <GRINUS>PUBLIC>UDIR>US0028>DATA.
```

Note: A description of each saved table has been written to a file named 'tree-name.FD', where 'tree-name' is the file to which the table was saved.

NOTE: If, after SAVING, you receive a message stating that File DATA already exists and asking whether you want to overwrite it, respond "NO." You will then be asked to supply your own file name. For more information, read ahead to the next SAV procedure.

John heard that the Southern Regional Plant Introduction Station (Experiment, Georgia) has just introduced information about another **Brassica** collection. He wants to look at some of the records of these plants as well. Usually, you should transfer only one file into INFO at a time, but it is possible to transfer more than one, as will be illustrated.

If John had not earlier noticed the code for the Georgia station, he could return to the Menu (enter **MENU** followed by **EVAL**) in order to locate it. Since John noticed the code earlier, however, he bypasses these steps. He directly enters **S3** for the Georgia collection site, followed by the appropriate code for their Brassica collection (91), and enters a **<return>** at each request for conditions, as follows:

> **S3 <return>**

S-9 CROP EVALUATION QUERIES

OPTION	CROP	OPTION	CROP
S91	Brassica	S92	Cajanus
S93	Cantaloupe	S94	Castor
S95	Cowpea	S96	Cucurbita
S97	Eggplant	S98	Gourds
S99	Grasses	S910	Guar
S911	Legumes	S912	Luffa
S913	Millet	S914	Miscellaneous
S915	Mungbean	S916	Okra
S917	Ornithopus	S918	Peanut
S919	Peppers	S920	Sesamum
S921	Sorghum	S922	Trifolium
S923	Vicia	S924	Watermelon
S925	Wingbean		

MENU Back up to main menu

QUIT Terminate query session

VERSION 2.0

>**S91 <return>**

Enter AND and conditions, or <cr>. Maximum 160 characters

>> **<return>**

continue conditions or <cr>
>> <return>

continue conditions or <cr>
>> <return>

Table DATA already exists. Do you wish to overwrite it ? Y <return>

Overwriting "Table DATA" removes the information about NC7-BRASSICA from memory and replaces it with the information from S9-BRASSICA. The NC7-BRASSICA data is not actually lost since it was saved to "File DATA" earlier.

If you realize suddenly that you did not save the first file, it is probably lost. If it contains important data, you might try responding "No" to the "overwrite" Table DATA command and making up a name for "Enter another Table name:" which will appear next.

After the new program runs, try SAV immediately at the first single prompt >. If you are lucky, it will save the old Table DATA. Then SAV the new Table using the name you gave it, something like SAV TABLE. No guarantees, but sometimes it works. Be aware that you risk losing the data in both tables and having to start over from the beginning with both selection processes.

If you do not have the problem mentioned, the usual "yes" here allows the above S9 process to run, as follows:

Virtual record count 1 . . . 165
Total number of virtual records: 165

Enter DISPLAY USING S9-BRASSICAn where n is the report number 1 thru 3
>> <return>

>SAV <return>

File DATA already exists. Do you wish to overwrite it?

If John no longer cares about the NC7-BRASSICA data which he saved to File DATA, he can reply "yes" and use File DATA to store the new material.

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Since, however, he wants to keep both sets of information, he replies "no" and is asked to assign another file name to the new material. He makes up a name for this information **BRASS-S**, and proceeds as follows:

File DATA already exists. Do you wish to overwrite it? **N <return>**

Enter another file name: **BRASS-S <return>**

Table DATA saved to <GRINUS>PUBLIC>UDIR>US0028>BRASS-S.

Note: A description of each saved table has been written to a file named 'tree-name.FD', where 'tree-name' is the file to which the table was saved.
>

John has now saved two files of data: **DATA** which contains the **NC7-BRASSICA** information and **BRASS-S** which contains the **S9-BRASSICA** information. He wants to transfer both of these files into **INFO** where he can look at them in a variety of ways without having to wait while GRIN searches through the entire system each time for his selections.

John must first return to the GRIN FUNCTIONS Menu before he can transfer the information. He enters **QUIT** to terminate the session, as follows:

> **Quit <return>**

Do you wish to terminate this session? **Y <return>**

GRIN FUNCTIONS:

DATA	Database selections menu
VIF	VISTA-INFO convert FORTRAN
VIC	VISTA-INFO convert COBOL
INFO	INFO8S data manager
COGS	Catalogue of GRIN services
HELP	GRIN help facility
NEWS	GRIN news
FULL	Set terminal to full duplex
HALF	Set terminal to half duplex
EXIT	LOGOUT of GRIN

FUNCTION CODE:

First, John must use the VIC command to prepare the two files for transfer. The other preparatory command, VIF, applies only to those files in which data has been selected using FORTRAN rather than COBOL.

The procedures discussed in this manual all utilize COBOL and, therefore, require VIC. Entering VIC automatically processes the NC7-BRASSICA dataset (saved in File DATA) into a form acceptable to INFO. If you had to supply two file names earlier, you will be asked to specify the first one here.

Usually the VIC process takes place quickly, although sometimes for very large files or during busy periods, you might experience delays. Enter VIC; the process has taken place when the GRIN FUNCTIONS Menu is displayed, as follows:

FUNCTION CODE: VIC <return>

GRIN FUNCTIONS:

DATA	Database selections menu
VIF	VISTA-INFO convert FORTRAN
VIC	VISTA-INFO convert COBOL
INFO	INFO8S data manager
COGS	Catalogue of GRIN services
HELP	GRIN help facility
NEWS	GRIN news
FULL	Set terminal to full duplex
HALF	Set terminal to half duplex
EXIT	LOGOUT of GRIN

FUNCTION CODE:

John enters VIC a second time in order to process the second file in which the S9-BRASSICA collection was saved (BRASS-S). In this case John definitely is asked to supply a file name. VIC automatically recognizes only File DATA. He proceeds, as follows:

FUNCTION CODE: VIC <return>
Filename?: BRASS-S <return>

The GRIN FUNCTIONS Menu will again be displayed.

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VIC must be used once for each file to be transferred. Since Public users cannot permanently store information which has been transferred into **INFO**, it would be unusual to transfer more than one file at a time. The information is lost when you complete a session and disconnect from GRIN. If you have an important file, you might make special advance arrangements with the DBMU team for saving the information for you.

After both files have been VIC'd, John is ready to enter **INFO**. You will notice that while you are in **INFO**, some of the command responses are entered for you; for example, the **USER NAME** is supplied below. As has been the practice, all of the commands which John must enter will be shown in **bold faced type**:

FUNCTION CODE: **INFO** <return>

WED. FEB 27 1985

INFO 8.40 7/2/82 52.74-63*

ENTER USER NAME>PUBLIC
ENTER COMMAND>

<--- {Note: This one
is done for you.}

NOTE: A revised version of **INFO** with a new greeting is on the way. Although the procedures will be basically the same, check the **HELP** command, as will be suggested in the new greeting, for additional information.

John Smith has entered **INFO** on Wednesday, Feb. 27, 1985. Because he is a public user, the user name is entered automatically for him. Although John is now working in the **INFO** system, his two files are not yet available for processing. They must first be entered individually into the system.

So that you can see how they are entered, first display the current directory, as follows:

ENTER COMMAND >**DIR** <return>

TYPE NAME	INTERNAL NAME	NO. RECS	LENGTH	EXTERNL
DF year-2	PUL000INF	-	60	
DF executive-paraphernalia	PUL001INF	5	60	

ENTER COMMAND>

Neither of John's files is listed in the directory. The command, CO [file name].CO, brings a file to INFO and defines it. Substitute DATA for [file name] and the NC7-BRASSICA information, which the system named DATA for you, will be entered and defined with a list of its characteristics.

The following list should contain about 40 items, but since it is a repeat of the COGS list, we have displayed only parts of it on the next page in order to save space. The command must be entered **exactly**. Don't forget the space and the period:

ENTER COMMAND >CO DATA.CO <return>

ENTER COMMAND >DEFINE DATA <--- {Entered for you.}

ITEM NAME,WIDTH [,OUTPUT WIDTH] ,TYPE [,DECIMAL PLACES] [,PROT.LEVEL]

1

ITEM NAME>OBS-ACC-ID,10,C

11

ITEM NAME>OBS-IDENT,5,0,0

16

. . .

[deletions here]

ITEM NAME>HARV-VIG2,5,0,0

61

ITEM NAME>HARV-VIG1,5,0,0

66

. . .

[and here]

ITEM NAME>GENUS,4,C

164

ITEM NAME>SPECIES,6,C

170

ITEM NAME>SOURCE,5,C

175

ITEM NAME>PLT-TYPE,2,C

177

ITEM NAME>FLWR-COL,8,C

185

ITEM NAME>FLWR,3,C

188

ITEM NAME>LIFE-CYC,2,C

190

ITEM NAME>CULT-REM,25,C

215

ITEM NAME>

ENTER COMMAND >GET DATA.DATA COPY <--- {Entered for you.}

841 RECORD(S) SELECTED

GRIN PUBLIC USERS MANUAL

John Smith repeats the same procedure for **S9-BRASSICA**, the file he named **BRASS-S**. Since John has not used **COGS** to get a list of these Descriptor labels, he needs to print the full list, as follows:

```
-----
ENTER COMMAND >CO BRASS-S.CO    <return>

ENTER COMMAND >DEFINE BRASS-S

ITEM NAME,WIDTH [,OUTPUT WIDTH] ,TYPE [,DECIMAL PLACES] [,PROT.LEVEL]
1
ITEM NAME>OBS-ACC-ID,10,C
11
ITEM NAME>OBS-IDENT,5,0,0
16
ITEM NAME>OBS-DSCODE,5,0,0
21
ITEM NAME>ROOT-LENGTH,10,C
31
ITEM NAME>MATURITY,10,C
41
ITEM NAME>LEAF-LENGTH,10,C
51
ITEM NAME>LEAF-WIDTH,10,C
61
ITEM NAME>ROOT-WIDTH,10,C
71
ITEM NAME>ROOT-COLOR,10,C
81
ITEM NAME>S-ORIGIN,30,C
111
ITEM NAME>CULT-REM,30,C
141
ITEM NAME>
ENTER COMMAND >GET BRASS-S.DATA COPY
165 RECORD(S) SELECTED
-----
```

After the initial command is entered, the rest happens automatically, just as it is shown above. Now, John Smith displays the directory again to verify that his two files have been transferred to **INFO** and are now available for processing:

```
-----
ENTER COMMAND >DIR <return>

TYPE NAME                INTERNAL NAME    NO. RECS  LENGTH  EXTERNAL
DF  year-2                PUL000INF      -         60
DF  executive-paraphernalia PUL001INF       5         60
DF  DATA                 PUL002INF     841       214
DF  BRASS-S               PUL003INF     165       140
-----
```

John wants to work first with File DATA, the NC7-BRASSICA collection. He enters **SELECT DATA**, as follows:

```
-----  
ENTER COMMAND >SELECT DATA <return>  
841 RECORD(S) SELECTED  
-----
```

All 841 NC7-BRASSICA records are now available for processing. John wants to compare **INFO** with his earlier procedure. He begins by entering the harvest vigor conditions used in the earlier procedure. He is careful to maintain **exact** spacing, including the perservation of one space between the = signs and adjacent material.

This command involves a **reselection** of the NC7-BRASSICA records already selected. John learns that 360 of the 841 records have the values he has designated for harvest vigor, as follows:

```
-----  
ENTER COMMAND >RESELECT FOR HARV-VIG1 = 1 OR HARV-VIG1 = 2  
OR HARV-VIG2 > 0 AND HARV-VIG2 < 4 <return>  
360 RECORD(S) SELECTED  
-----
```

NOTE: If you make a mistake, simply enter **ASELECT** to return to the full set of 841 records originally loaded and **SELECTed**.

John now instructs **INFO** to **reselect** from the above 360 records all those records for the species **napus**. He is left now with 48 records which meet all conditions, as indicated below:

```
-----  
ENTER COMMAND >RESELECT FOR SPECIES = 'NAPUS' <return>  
48 RECORD(S) SELECTED  
-----
```

GRIN PUBLIC USERS MANUAL

Next, John RESELECTs again in order to narrow his selection further to those plants whose sources are either India or Turkey. The number of plants now meeting all conditions is further reduced to 15:

```
ENTER COMMAND >RESELECT FOR SOURCE = 'INDIA' OR SOURCE = 'TURKY'
<return>
15 RECORD(S) SELECTED
```

John continues the RESELECT procedure for each of his conditions in sequence, as follows:

*** NOTE - Note abbreviated form of the third RESelect ***

```
ENTER COMMAND >RESELECT FOR PCT-STND > 80 <return>
8 RECORD(S) SELECTED
```

```
ENTER COMMAND >RESELECT FOR LIFE-CYC = 'AN' <return>
4 RECORD(S) SELECTED
```

```
ENTER COMMAND >RES PLT-HGT2 > 49 AND PLT-HGT2 < 121
<return>
4 RECORD(S) SELECTED
```

Through INFO, John has selected the same four records that he selected in the earlier DATA-EVAL procedure. In order to verify that they are really the same records, he lists them, as follows. To save space, we will display the full information for only the first record.

```
ENTER COMMAND >LIST <return>
```

```

OBS-ACC-ID      =PI  169075
OBS-IDENT       =    1
OBS-DSCODE      =   13
GRW-HAB2        =    0
GRW-HAB1        =    0
DYS-FLWR        =    0
SDLG-VIG2       =    0
SDLG-VIG1       =    0
BLM-VIG2        =    1
BLM-VIG1        =    1
HARV-VIG2       =    1
HARV-VIG1       =    1
LEAF-NO1        =    0
LEAF-NO2        =    0
LEAF-SZ1        =    0
LEAF-SZ2        =    0
LEAF-RET2       =    0
LEAF-RET1       =    0
LEAF-TEXT1      =    0
LEAF-TEXT2      =    0
STEM-SZ1        =    0
STEM-SZ2        =    0
MORE?  <return>

```

```

SEED-RET2       =    0
SEED-RET1       =    0
SEED-PROD2      =    1
SEED-PROD1      =    1
PCT-STND        =   95
PLT-HGT1        =    0
PLT-HGT2        =   50
PI-NO           =  16907
AVAIL           =Y
GENUS           =BRAS
SPECIES         =NAPUS
SOURCE          =TURKY
PLT-TYPE        =
FLWR-COL        =
FLWR            =
LIFE-CYC        =AN
CULT-REM        =
  25

```

Similar information was also displayed for plants where the "OBS-ACC-ID" was equal to the following: PI 169080; PI 169081; and PI 271452. These are the same numbers selected in the earlier procedure. See Case Study, Problem 3 (Page III-37,38).

John is satisfied that the results are comparable. If, at any time, he had wished to stop the display process, he could have responded "no" to the question: "More?"

NOTE: In the DATA-EVAL process, only a Control-P stops selection or display. In INFO, a simple NO works.

John Smith now wants to return to the original 841 records. The command **ASELECT** discards the results of the selection procedures already carried out and returns him to the original records where he can begin the **RESELECT** process in a new way.

Perhaps John would like to look at the source countries other than Turkey or India. He has only to specify **RESELECTION** which is not equal to **(NE)** India or Turkey, and once the process is complete, he may display the identification numbers together with the countries for each, as follows:

NOTE: This is an excellent way to determine the proper spelling for an abbreviation of a country name. Note also the abbreviated form of the **ASELECT** command.

```
-----  
ENTER COMMAND >ASEL      <return>  
841 RECORD(S) SELECTED  
  
ENTER COMMAND >RES SOURCE NE 'TURKY'  
                <return>  
783 RECORD(S) SELECTED  
  
ENTER COMMAND >RES SOURCE NE 'INDIA'  
                <return>  
490 RECORD(S) SELECTED  
-----
```

John now wants to display the PI numbers and the sources for plants with sources other than India or Turkey.

ENTER COMMAND >DISPLAY OBS-ACC-ID,SOURCE <return>

PI 113310 CHINA
PI 131249 NETH
PI 131512 NETH
PI 175066 NEPAL
PI 175067 NEPAL
PI 179848 PAK
PI 179850 PAK
PI 184290 G B E
PI 184452 GER
PI 184453 GER
PI 192936 CHINA
PI 193459 ETHI
PI 193460 ETHI
PI 193467 ETHI
PI 193756 ETHI
PI 193960 ETHI
PI 194251 ETHI
MORE? N <return>

A simple "no" stops the display procedure and, having identified a large number of plants from Ethiopia and from Pakistan, John wishes to do further reselections.

This particular procedure helps him identify the correct spelling for other SOURCE labels, like those from Sweden (SWEDN) or from Great Britain, England (G B E) or from Puerto Rico (USAPR).

ENTER COMMAND >RESELECT FOR SOURCE NE 'ETHI' <return>

442 RECORD(S) SELECTED

ENTER COMMAND >RESELECT FOR SOURCE NE 'PAK' <return>

218 RECORD(S) SELECTED

ENTER COMMAND >DISPLAY OBS-ACC-ID, SOURCE <return>

PI 113310 CHINA
 PI 131249 NETH
 PI 175066 NEPAL
 PI 184290 G B E
 PI 184452 GER
 PI 192936 CHINA
 PI 198062 SWEDN
 PI 207465 AFGH
 PI 208734 CUBA
 PI 209020 USAPR
 PI 209021 CUBA
 PI 209023 USAPR
 PI 209781 GER
 PI 209782 GER
 PI 212082 AFGH
 MORE?N <return>

Time is growing short. John Smith still wants to look at the **S9-BRASSICA** (the **BRASS-S** File) collection before he stops. He enters the **SELECT** command, displays the **ITEMS** available in order to locate the correct spelling for the condition labels, carries out a **RESELECT** procedure, and displays the information in the following sequence:

ENTER COMMAND >SELECT BRASS-S <return>

165 RECORD(S) SELECTED

ENTER COMMAND >ITEMS <return>

DATAFILE NAME: BRASS-S

2/27/198

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	PROT	KEY	OCCURS	INDE
11	ITEMS: STARTING IN POSITION		1						
1	OBS-ACC-ID	10	10	C	-	4	-	-	-
11	OBS-IDENT	5	5	O	0	4	-	-	-
16	OBS-DSCODE	5	5	O	0	4	-	-	-
21	ROOT-LENGTH	10	10	C	-	4	-	-	-
31	MATURITY	10	10	C	-	4	-	-	-
41	LEAF-LENGTH	10	10	C	-	4	-	-	-
51	LEAF-WIDTH	10	10	C	-	4	-	-	-
61	ROOT-WIDTH	10	10	C	-	4	-	-	-
71	ROOT-COLOR	10	10	C	-	4	-	-	-
81	S-ORIGIN	30	30	C	-	4	-	-	-
111	CULT-REM	30	30	C	-	4	-	-	-

ENTER COMMAND >RESELECT FOR ROOT-LENGTH NE ' ' <return>
 15 RECORD(S) SELECTED

The above command illustrates how to find out how many **S9-BRASSICA**'s have been evaluated for root length. The empty quotation marks designate that for a plant to be selected, root-length must have a value. John Smith displays the PI numbers and root lengths for the selected plants, as follows:

ENTER COMMAND >DISPLAY OBS-ACC-ID, ROOT-LENGTH <return>

PI 162778 10
PI 163494 10
PI 163496 8
PI 163497 8
PI 164398 8
PI 164494 13
PI 164542 5
PI 223499 5
PI 223501 5
PI 227296 4
PI 250004 8
PI 269442 13
PI 269443 13
PI 269445 13

{Remember, the plants listed here
are those selected because they
have been evaluated for root
length. }

Back to the original 165 **S9-BRASSICA** plants by using **ASELECT**, John again **RESELECTs** in order to find out the number of plants which have been evaluated for source/origin (next to final ITEM listed: **S-ORIGIN**). The quotation marks are once again left empty.

ENTER COMMAND >ASELECT <return>
165 RECORD(S) SELECTED

ENTER COMMAND >RESELECT FOR S-ORIGIN NE ' ' <return>
157 RECORD(S) SELECTED

NOTE: The **NC7-BRASSICA** collection uses **SOURCE** and the **S9-BRASSICA** collection uses **S-ORIGIN**. These categories may differ in content as well as title. **COGS** ususally provides the best definitions; however, **S9** has not yet been catalogued, so the next best choice is through the **DST** option of **DATA-EVAL**.

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NOTE: Also, notice that Turkey is spelled **TURKE** in the following reselected **S9-BRASSICA** set. It was spelled **TURKY** earlier in **NC7-BRASSICA**. These designations are determined by criteria established at the individual collection sites and are not necessarily consistent with each other, as the following display shows. The best source for information about countries of origin and acquisition is the accession record where the country names are spelled correctly and precise distinctions are made between origin and acquisition.

ENTER COMMAND >DISPLAY OBS-ACC-ID, S-ORIGIN <return>

```
PI 113314 CHINA
PI 117122 TURKE
PI 117126 TURKE
PI 121839 INDIA
PI 121840 INDIA
PI 138882 IRAN
PI 138887 IRAN
PI 162778 ARGEN
PI 174076 TURKE
PI 179189 TURKE
PI 179638 INDIA
PI 179641 INDIA
```

MORE?NO <return>

Although he would like to continue, it is after 8PM--see the log out time below--and John Smith is tired. Knowing that he will again have to select both sets of Brassica data through **DATA-EVAL** when he uses **INFO** the next time, John Smith returns to the GRIN FUNCTIONS Menu by entering the command which is necessary to exit INFO: **Q STOP**

ENTER COMMAND >Q STOP <return>

GRIN FUNCTIONS:

DATA	Database selections menu
VIF	VISTA-INFO convert FORTRAN
VIC	VISTA-INFO convert COBOL
INFO	INFO8S data manager
COGS	Catalogue of GRIN services
HELP	GRIN help facility
NEWS	GRIN news
FULL	Set terminal to full duplex
HALF	Set terminal to half duplex
EXIT	LOGOUT of GRIN

FUNCTION CODE:

Remember, it is important to formally log out of the GRIN system. Some host computer systems terminate the connection if no action occurs for a specified time, usually only a few minutes. GRIN knows that data selection takes planning and can be time consuming. For your convenience, GRIN keeps the connection open for about two hours.

If you do not formally **EXIT** the system, you may be preventing another user from gaining immediate access. The procedure is simple. Please remember to type **EXIT**, as follows, and GRIN will do the rest.

If you are rushed, you don't even have to wait for the GRIN FUNCTIONS Menu to finish displaying. Go ahead and type **EXIT**, enter a carriage return, and hang up. If you do wait, however, GRIN will reward you by displaying the current date and time and a summary of your hard work in using the system:

FUNCTION CODE: **EXIT** <return>

PUBLIC (user 28) logged out Wednesday, 27 Feb 85 20:27:24.
Time used: 00h 43m connect, 03m 40s CPU, 01m 13s I/O.

SECTION IV

THE MAIN MENU OF THE GRIN DATABANK: GRIN FUNCTIONS

After you have entered your password correctly, GRIN will signify that the system is available by displaying its main menu, the **GRIN FUNCTIONS Menu**, as shown below:

GRIN FUNCTIONS:

DATA	Database selections menu
VIF	VISTA-INFO convert FORTRAN
VIC	VISTA-INFO convert COBOL
INFO	INFO8S data manager
COGS	Catalogue of GRIN services
HELP	GRIN help facility
NEWS	GRIN news
FULL	Set terminal to full duplex
HALF	Set terminal to half duplex
EXIT	LOGOUT of GRIN

FUNCTION CODE:

The **GRIN FUNCTIONS** Menu permits you to enter the various parts of the system which are important to your research: **DATA** permits you direct access to the GRIN databank; **COGS** provides an organized catalogue of the information in the GRIN databank; and **INFO** allows you to transfer selected information into a file utility for further processing.

NOTE: The **DATA** option originally was called **CHAR**. If you find a reference to **CHAR** in any of the GRIN information, it means **DATA**. Every effort has been made to replace all references to **CHAR** with **DATA**, but the GRIN gremlins keep putting them back in.

The **GRIN FUNCTIONS** menu also allows you to carry out housekeeping activities: **FULL** and **HALF** permit you to change the duplex setting; **VIF** and **VIC** permit you to convert selected data into suitable formats for loading into the **INFO** system.

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GRIN also allows you to find out more about the system using the **HELP** option which provides basic information and **NEWS** which provides the latest updates and changes in the system.

Finally, the GRIN FUNCTIONS Menu provides the means for logging out of or **EXITing** the system. You should always use this option to leave GRIN. Otherwise you might delay another user from logging into the system.

Even after you disconnect your telephone from GRIN, another user might be prevented from immediately logging into the space you vacated if you have not formally logged out through the **EXIT** option of the GRIN FUNCTIONS Menu.

The **DATA** and **COGS** options will be discussed fully in other sections of this manual. **INFO** will be discussed only briefly here since a separate manual, the **INFO Primer**, describes its operation. The **INFO PRIMER** may be obtained from the GRIN Database Manager. See the greeting message when you log into the GRIN system or the Introduction to this manual (Page I-2).

In this section of the manual, the following options available from the GRIN FUNCTIONS Menu will be summarized in some detail: **VIF**, **VIC**, **HELP**, **NEWS**, **FULL**, **HALF**, and **EXIT**

First, the **HELP** option provides a quick summary of reminders about **DATA**--remember, **DATA** was once **CHAR--**, **INFO**, **VIF**, **VIC**, **FULL**, and **HALF**. It also displays a brief history of the GRIN system, statements about its goals and intended audience, and information about problems a user might experience when using GRIN. Enter **HELP** in response to the request for FUNCTION CODE, as follows:

FUNCTION CODE: **HELP** <return>

GRIN HELP FRAME

- DATA -

Q or QUIT to exit from DATA
BREAK to interrupt current action
USE SUBS [...] OF [...]
UNLOCK AREAS [...] WITH 'NPGS'
UNLOCK RECORDS [...] WITH 'GPMPKE'
SE [ALL/...] FROM [...] [WH ...]
SE AND DI [ALL/...] FR [...] [WH ...]
DISPLAY ONLY X, Y, Z (data elements)
DISPLAY USING [report-name][report-no]
SAV to save your data file

- INFO -

USER NAME > PUBLIC
CO DATA.CO to load your data file
CO FILENAME.CO if you named a file
ENTER COMMAND>Q STOP to exit, or.
ENTER COMMAND>STOP/USER NAME>STOP
SELECT FILENAME/RESEL FOR X = 'n'
LIST to display all data elements
DISPLAY X, Y, Z (data elements)
DIR to list directory contents
ITEMS lists items of SELECTed file

- VIF -

- VIC -

FORTRAN SUBSCHEMAS

COBOL SUBSCHEMAS

VIF <cr> to convert to INFO format

VIC <cr> to convert to INFO format

- FULL -

- HALF -

FULL to change PRIME to FULL duplex

HALF to change PRIME to HALF duplex

This is a "QUICK" reference page for experienced users. Detail follows.

MORE? Yes <return>

GRIN PUBLIC HELP FRAME

Congratulations, you have logged into the Germplasm Resources Information Network. The previous page was a quick reference page for users who have some familiarity with the GRIN system.

You are attached to a PRIME 750 mini-computer located at the National Agricultural Library, Beltsville Agricultural Research Center (BARC), in Beltsville, Maryland. If you have questions, or need additional assistance, please contact the GRIN DataBase Management Unit (DBMU) at (FTS/301) 344-3318, or 344-2646 from 7:00 a.m. to 4:30 p.m. (Eastern time). . . .

The HELP option continues on for several pages. You may wish to explore them. Each of the options of the GRIN FUNCTIONS Menu will now be described following a sample of the command required for executing the particular option.

FUNCTION CODE: DATA

The DATA option is probably the most useful to researchers because it provides direct access to the information in the databank. Until February 1985, DATA was called CHAR, a reference to its ability to retrieve information about the characteristics of the plant materials in the databank.

In February 1985, the CHAR menu was revised (Version 1.0 became Version 2.0) and its name was changed to DATA. The second version expands upon the first in order to provide better access to the information. The new version also simplifies certain procedures. You might not recognize DATA as the successor to CHAR, but be assured that this new version permits you to carry out all of the old CHAR functions, and for the most part, carry them out with greater ease.

The next section of this manual (DATA SELECTION) will explain the DATA option in detail.

FUNCTION CODE: VIF

VIF, the VISTA-to-INFO utility, allows you to convert "SAV"ed data from a FORTRAN subschema to a format acceptable to INFO. Fortran files may be used for certain "ad-hoc" queries; however, users must be skilled in Fortran and in using GRIN in order to set up Fortran files.

NOTE: Anyone who wants further information about using FORTRAN subschemas should contact the Database Manager.

FUNCTION CODE: VIC

VIC, the VISTA-to-INFO utility, is similar to VIF. This option allows you to convert "SAV"ed data from a COBOL subschema to a format acceptable to INFO. Currently, queries which are carried out within the PUBLIC system use COBOL subschemas. Unless you set up an "ad-hoc" query which specifically uses a Fortran subschema, always use VIC to convert your "SAV"ed files to INFO.

FUNCTION CODE: INFO

INFO was not developed specifically for GRIN. It is a specialized utility which is part of the Primos data management system but has proved useful for some of the GRIN processes. With INFO you may manipulate saved data to produce custom reports or to "RESELECT" data using tighter selection criteria.

For a description and examples of how to use the INFO procedures, see the TUTORIAL section of this manual beginning on page III-57. For a more complete explanation of INFO, contact the GRIN Database Manager for a copy of the INFO Primer.

In order to transfer information from DATA into INFO, you must first save (SAV) the results of each query into separate files, execute the VIC command for each, and then enter the data files individually into INFO, as follows:

CO [filename].CO <return>

Each of three commands (SAV, VIC and CO above) must be entered separately for each file to be transferred into INFO. Once these procedures have been carried out, you may work with the files individually based on the INFO procedures.

A list of INFO commands is available through the HELP command after entering INFO. These commands probably will not be helpful to you unless you first read the INFO PRIMER Manual. The command and the first two lines of the list is displayed below:

FUNCTION CODE: INFO <return>

SAT, FEB 23 1985
INFO 8.40 7/2/82 52.74-63*
ENTER USER NAME>PUBLIC

ENTER COMMAND >HELP <return>

VALID INFO COMMANDS

QUIT	1	STOP	1	DEFI	2	ITEM	3	SELE	4	REDE	5
PROT	6	ADD	7	DELE	8	ERAS	8	DIRE	9	LIST	10
.	.	.									

FUNCTION CODE: COGS

The COGS command gives you access to a specially prepared catalogue of the GRIN system. It includes a list of the Regional Plant Introduction Stations participating in GRIN, summary information about the various plant crops housed by each RPIS, and a summary of information available in the GRIN databank system. Since COGS is one of the important resources for users of the system, it is more fully discussed in the COGS section of this manual.

FUNCTION CODE: HELP

The HELP option provides general information for public users of the GRIN facilities. If you encounter a problem using GRIN, the HELP option might offer a solution. Information from the HELP option is displayed earlier in this section of the manual.

FUNCTION CODE: NEWS

The **NEWS** option provides information about changes in the system. This information is arranged chronologically beginning with the most recent notices and moving backward in time. You should check the **NEWS** option periodically for important information. Displayed below is the most current page of **NEWS** as of Feb. 20, 1985:

FUNCTION CODE: **NEWS** <return>

GRIN NEWS

2/20/85

You will notice that we have changed the menu option **CHAR** to **DATA**. Since all queries for all data in GRIN are done with the **DBMS/QUERY** package, it was felt that **CHAR** may have incorrectly given the impression that only characteristic data was available by using the option **CHAR**. . . .

MORE? No <return>

FUNCTION CODE: FULL

The **FULL** option changes your working environment to **FULL duplex**. If the initial commands you enter (**LOGIN PUBLIC** and your access code) are not displayed on your terminal screen, you should try changing to full duplex.

FUNCTION CODE: HALF

The **HALF** option changes your working environment to **HALF duplex**. If you receive double characters when you type your login command and access code, you should try changing to half duplex.

FUNCTION CODE: EXIT

The **EXIT** option ends your session within GRIN and logs you out of the system. It is important to use the **EXIT** command to formally log out of the GRIN system so that you will not prevent another user from immediately logging into the space you have vacated.

FUNCTION CODE: **EXIT** <return>

PUBLIC (user 28) logged out Saturday, 23 Feb 85 23:30:52.
Time used: 01h 14m connect, 00m 13s CPU, 00m 03s I/O.
OK,

GRIN responds to your **EXIT** command with a message that indicates the following: User ID (PUBLIC) and space (called a port) occupied within the system (28); date and exact time you logged out (Feb. 23, 1985 at 11:30PM and 52 seconds); amount of time you used on the system (1 hour and 14 minutes); and usage information (CPU and I/O seconds).

If you want general information about the GRIN system, there are system utilities and status (PRIMOS) commands available through the **PRIM** option of **DATA**. More explanation about each and sample sessions are provided in the **DATA SELECTION** section of this manual under **PRIM** option (Page V-40).

SECTION V

DATA SELECTION IN THE GRIN SYSTEM: THE DATA MENU

DATA is probably the most important option available from the main or GRIN FUNCTIONS Menu. It is particularly useful because it provides direct access to the databank information.

Earlier, the **DATA** option was called **CHAR**; however, many useful additions and modifications have been incorporated into this option, and if you were familiar with the old **CHAR**, you should be pleasantly surprised by the changes.

From the GRIN FUNCTIONS Menu, begin by entering **DATA** and the "GRIN QUERY MENU OPTIONS" will appear, as follows:

FUNCTION CODE: **DATA** <return>

GRIN QUERY MENU OPTIONS

OPTIONS	ACTIONS
ACC	GRIN Passport data selections
COOP	GRIN Cooperator selections
EVAL	GRIN Crop Evaluation data selections
DST	GRIN Dataset descriptions
MISC	Create your own ad hoc selection
PRIM	PRIMOS utilities and status commands
SAV	SAVe your query output to PRIMOS level. First SAVed file called DATA. You name 2nd thru Nth
INIT	Initialize these menus and procs following error

MENU = Redraw this menu HOW = Short Instruction QUIT = Terminate session
VERSION 2.0
>

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Currently DATA provides the eight options listed on the preceding page. The third option, EVAL, is probably the most frequently used. It provides for the direct selection of plant materials from a particular crop collection. Access to information about these plants is gained through a list of the various crop sites, followed by lists of their crop collections. The selection process is then based on specifying values for the characteristic descriptors of the crop.

The other seven options provide access to more specific kinds of information and to special programs designed to simplify the data selection process for you. Each option will be discussed in sequence beginning with the first one, ACC.

THE ACC OPTION

The ACC option provides a series of programs which retrieve information from accession records. Accession records, sometimes said to contain "passport" data, hold basic information which accompanies a plant material at the time it first "passes" into the National Plant Germplasm System (NPGS). See the introductory section of this manual for a discussion of the information found in and an example of accession records (Page I-4).

Keep in mind that "an accession" refers to an individual plant material which has been given an identification number and has been described within the GRIN system. The ACC options provide easy access to a particular accession or group of accessions.

These options were developed as a result of questions frequently asked by researchers and plant breeders. In the future as the needs of GRIN users are better understood, the GRIN DBMU team may develop other options as part of ACC. Every effort will be made to keep them simple, and explanations will be added to the NEWS option which is available from the main GRIN FUNCTIONS Menu.

Although many of the ACC options are self explanatory, we will briefly describe them and provide model entries to help you know what to expect. Enter ACC and the GRIN PASSPORT DATA SELECTION OPTIONS Menu will appear, as follows:

> ACC <return>

GRIN PASSPORT DATA SELECTION OPTIONS

OPTION	QUERY GENERATED
A1	Select a particular ACCESSION by its primary identifier
A2	Select a list of ACCESSIONS by origin country name
A3	Select a list of ACCESSIONS by Genus name
A4	Select a list of ACCESSIONS by Genus and species names
A5	Select a list of ACCESSIONS by taxonomy and origin
A6	Select a list of ACCESSIONS by donor
A7	List GRIN Origin Country Names
A8	List GRIN Genus names
A9	List GRIN donors (individuals and organizations)

MENU Back up to main menu QUIT Terminate query session

VERSION 2.0

>

ACC OPTION A1

The first option, A1, allows you to display the original accession record for any plant which has a primary identification number.

For the present, most PI numbers have six digits. When you enter a 6-digit PI number, leave two blank spaces between PI and the number, as shown by the symbols ↑↑ in the entry below. The quotation marks are not required in this case but must be present in pairs if used, as suggested by the prompt in the example below:

>A1 <return>

Enter 10 character ID, with imbedded blanks. ex: "PI 123456">>
"PI↑↑271452" <return>

Virtual record count: 1

Total number of virtual records: 1

GRIN PUBLIC USERS MANUAL

GRIN Accession Record Review

PI 271452 Supply Site: NC-7 Inv Id: UNKNOWN

Taxon: Brassica napus
 Sub-species:
 Variety:
 Cultivar:
 Comn name:

P:
 Acquisition ctry: India
 Origin ctry: UNKNOWN
 Date rec'd: Date released:
 Date entered: OCT 8, 1982 Entered by: JAS
 Date PI assigned: Date taxon assigned:
 PIO approved: NO Attributes: NO Donor/Collector flag: NO
 PIO crop category: NONE PIO life form: UNKNOWN
 PIO form received: UNKNOWN PIO Improvement status: UNKNOWN

Not all primary identification numbers are 6-digit PI numbers. In all cases, however, ten characters or a ten character "field" has been reserved for primary identification numbers.

The introductory characters must begin at the left margin of the field (left justified) and the digits must end at the right margin of the field (right justified). Whatever number of spaces is required to make up a ten character field (an entry which is equal to exactly ten characters) must be inserted between the introductory characters and the digits.

If a number has two introductory characters (like PI) and six digits, two blank spaces must be inserted to maintain a field of ten characters, as shown in the example above. If a number has three introductory characters (like NSL or CI2) and only four digits, then three blank spaces must be inserted to maintain the ten character field, as shown in the two examples below:

> A1 <return>

Enter 10 character ID, with imbedded blanks. ex: "PI 123456">>
 NSL↑↑↑6141 <return>

Virtual record count: 1
 Total number of virtual records: 1

GRIN Accession Record Review

NSL 6141 Supply Site: NSSL Inv Id:
Taxon: Brassica juncea
Sub-species:
Variety:
Cultivar: GIANT SOUTHERN CURLED EX LONG
Comm name:
Acquisition ctry: United States New York

> A1 <return>

Enter 10 character ID, with imbedded blanks. ex: "PI 123456">>
CI2↑↑↑3028 <return>

Table DATA already exists. Do you wish to overwrite it? Y
Virtual record count: 1

GRIN Accession Record Review

CI2 3028 Supply Site: SGC Inv Id:
Taxon: Avena sp.
Sub-species:
Variety:
Cultivar:
Comm name:
Acquisition ctry: United States South Carolina

ACC OPTION A2

The second option, A2, displays a list of GRIN accessions from a specified country of origin. The GENUS and SPECIES will be listed in the display to help you identify the kind of plant.

Notice that the country name is spelled correctly, not abbreviated as it sometimes is elsewhere. Also, the name must begin with a capital letter followed by lower case letters. All CAPS will not work. See Option A7 below for a list of country names which might help you identify the exact spelling.

Remember too that each request after the first one probably will require overwriting Table DATA. Always indicate "Y" or "Yes" unless you need to save the preceding selected data.

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Any information obtained through EVAL may be saved and data later transferred into INFO for further processing. See the discussion of the SAV option (Pages III-59,61; V-44??).

> A2 <return>

Enter country name. First letters are generally capitals >>
Turkey <return>

Table DATA already exists. Do you wish to overwrite it?
Y <return>

GRIN ACCESSIONS FROM: Turkey

IDENTIFIER	GENUS NAME	SPECIES NAME
PI 477014	Phaseolus	vulgaris
PI 451817	Phaseolus	vulgaris
PI 451791	Phaseolus	vulgaris
PI 451790	Phaseolus	vulgaris
PI 451687	Cicer	arietinum
PI 451686	Cicer	arietinum
PI 451685	Cicer	arietinum

...{Table shortened to save space. }

PI 451674	Cicer	arietinum
-----------	-------	-----------

Enter <CR> to continue: <Control-P>
QUIT.

Do you wish to abort this procedure? Y <return>
Do you wish to retain the partially selected table? N <return>

ACC OPTION A3

The third option, A3, allows you to specify a particular taxonomic Genus. The Identification number, the Site location, the Species name, and the Origin Country for each accession in the specified Genus is then displayed, as follows:

>A3 <return>

Enter Genus name. First letters are capitalized as: Poa
>> Brassica <return>

GRIN ACCESSIONS FOR GENUS: Brassica

IDENTIFIER	SITE	SPECIES	ORIGIN COUNTRY
PI 435896		balearica	Spain
PI 121839	S-9	campestris	UNKNOWN
PI 164841	NC-7	campestris	UNKNOWN

...{Table shortened to save space. }

PI 173846	NC-7	campestris	UNKNOWN
PI 173848	NC-7	campestris	UNKNOWN
PI 173849	NC-7	campestris	UNKNOWN
PI 173852	NC-7	campestris	UNKNOWN
PI 173864	NC-7	campestris	UNKNOWN

Enter <CR> to continue: <Control-P>
QUIT.

Do you wish to abort this procedure? Y <return>
do you wish to retain the partially selected table? N <return>

ACC OPTION A4

The fourth option, A4, displays all of the GRIN accessions for a specified taxonomic Genus and Species. It also displays information about the Site location and the countries of Origin and of Acquisition, as follows:

> A4 <return>

Enter Genus name. First letters are capitalized as: Poa
>>Brassica <return>

Enter species name, all lower case as: sativa
>> napus <return>

GRIN PUBLIC USERS MANUAL

ACCESSIONS FOR: Brassica

napus

IDENTIFIER	SITE	ORIGIN	COUNTRY	ACQUISITION COUNTRY
NSL	6113	NSSL	UNKNOWN	United States
NSL	6118	NSSL	UNKNOWN	United States
NSL	6461	NSSL	UNKNOWN	United States
NSL	9360	NSSL	UNKNOWN	UNKNOWN

...{Table shortened to save space. }

NSL	80306	NSSL	UNKNOWN	UNKNOWN
NSL	165769	NSSL	United States	UNKNOWN
NSL	180171	NSSL	Canada	UNKNOWN
PI	121840	S-9	UNKNOWN	India
PI	138882	S-9	UNKNOWN	Iran

Enter <CR> to continue: <Control-P>
QUIT.

Do you wish to abort this procedure? Y <return>
do you wish to retain the partially selected table? Y <return>

ACC OPTION A5

The fifth option, A5, selects all of the GRIN accessions for a specified Genus and origin country. It also displays the Identification number, the Species, Site location, and Acquisition country, as shown below:

NOTE: This option executes slowly. Be patient.

> A5 <return>

Enter Genus name. First letter is capitalized as: Poa
>> Brassica <return>

Enter country name. First letter is capitalized as: Japan
>> Turkey <return>

Table DATA already exists. Do you wish to overwrite it?
Y <return>

GENUS: Brassica

Accessions originating in: Turkey

IDENTIFIER	SPECIES	SITE	ACQUIRED THROUGH
PI 171532	oleracea	NSSL	UNKNOWN
PI 204860	oleracea	NSSL	UNKNOWN
PI 120911	rapa	S-9	Turkey

>

In this particular search, only three Brassica plants have their sources in Turkey. Because the first record was not found near the beginning of the search, it took a long time before information began to appear on the screen. Depending on the number of records in a particular crop (NC7-BRASSICA has about 845), some of the ACC programs take a long time. Remember, this process executes slowly. Be patient.

NOTE: If you are recording the information from a search to your own data disc, you may have to send your computer an occasional message to let it know that you want to continue. Some terminal programs automatically close a file when there is no action for about 60 seconds. Usually a carriage return works best. It does no harm to the GRIN program and lets your system know that you want to continue.

ACC OPTION A6

The sixth option, A6, allows you to enter either the last name of an individual donor or the name of an organization in order to list the Identification number and the Genus for each of the accessions donated.

A complete list of individual and organizational donors may be found in option A9. These names must be typed exactly as they appear in that list. Notice that the first letter of the last name must be a capital and the others must be lower case or the program finds no data, as shown below:

>A6 <return>

Enter donor last name or organizational designation >>
tamari <return>

(Warning) Table DATA is empty.

GRIN PUBLIC USERS MANUAL

Try again, using a capital T for Tamari:

>A6 <return>

Enter donor last name or organizational designation >>
Tamari <return>

GRIN ACCESSIONS BY DONOR

IDENTIFIER	DONOR NAME	Genus
PI 64698	Tamari	Glycine

When entering the name of an organization, be certain to reproduce each and every character, **exactly** as it is listed, including punctuation, under the column headed "COOPERATOR-LAST-NAME." Also, include the double slashes which currently precede the organizational entries.

COOPERATOR-LAST-NAME
//Agri-Bus. Consulta
//Con Tec Ag-Cambodi
//Arthur Yates & Co.
//Dep Ag Tec Ser-Pre
//Rockefeller Found.
//Bismarck PMC-SCS
//Bridger PMC-SCS
//Asian Veg. Res. &

First try the Rockefeller Foundation. Enter it exactly as it appears above:

> A6 <return>

Enter donor last name or organizational designation >>
//Rockefeller Found. <return>

GRIN ACCESSIONS BY DONOR

	IDENTIFIER	DONOR NAME	Genus
	PI 277158	//Rockefeller Found.	Zea
	PI 277159	//Rockefeller Found.	Zea
	PI 277160	//Rockefeller Found.	Zea
	PI 277161	//Rockefeller Found.	Zea
	PI 277162	//Rockefeller Found.	Zea
	PI 277163	//Rockefeller Found.	Zea

Next try the Asian Vegetable Resources and Development Center:

> A6 <return>

Enter donor last name or organizational designation >>
//Asian Veg. Res. & <return>

GRIN ACCESSIONS BY DONOR

	IDENTIFIER	DONOR NAME	Genus
	PI 478401	//Asian Veg. Res. &	Vigna

>

OPTION A7

The seventh option, A7, lists the countries and states in which plant accessions have originated. In this particular listing, you may designate an alphabetic starting point, as shown below:

> A7 <return>

Enter Alphabetic beginning point. Examples: B or Sov >>
United <return>

GEOO-COUNTRY

GEOO-STATE

United Arab Emirates	
United Kingdom	
United Kingdom	England
United Kingdom	Scotland
United Kingdom	Wales
United States	
United States	Alabama
United States	Alaska
United States	Arizona
United States	Arkansas
United States	California
United States	Colorado
United States	Connecticut

Enter <CR> to continue: <Control-P>
QUIT.

OPTION A8

The eighth option, A8, displays a list of Genera by which plant accessions have been classified. This option also allows you again to designate the alphabetic starting point, as shown below:

> A8 <return>

Enter Alphabetic beginning point. Examples: S or Med

>> bras <return>

(Warning) Table DATA is empty.

The Table is not really empty. The initial "b" for Brassica must be a capital letter, as follows:

> A8 <return>>

Enter Alphabetic beginning point. Examples: S or Med >>

Bras <return>

Table DATA already exists. Do you wish to overwrite it?

Y <return>

GENUS-NAME

Brasenia
Brassaia
Brassavola
Brassica
Brickellia
Bridelia
Britoa
Briza
Bromelia
Bromus
Brosimum
Broussonetia
Browallia
Brownea
Brugmansia
Brunfelsia
Brunia
Brunnichia
Brya
Bryonia
Buchanania

Enter <CR> to continue: <Control-P>

QUIT.

Do you wish to abort this procedure? Y <return>

do you wish to retain the partially selected table? N <return>

OPTION A9

The ninth and final ACC option, A9, displays two lists, one of individuals and the other of organizations who have made contributions to the GRIN databank. Using information from this list, you may display a list of the identification numbers for plants contributed by any donor you specify through Option A6.

Select either individual (I) or organizational (O). These letters must be in CAPS to work. If you wish to display lists for both individuals and for organizations, you must enter A9 a second time in order to display the second list, as shown below:

> A9 <return>

Enter I for list of individuals or O for list of organizations
>> I <return>

COOPERATOR-LAST-NAME

Tamari
Tuck
UNKNOWN
Westover
Woeikoff
Cochran
Correll
Fox
Gardner
Hooper
Martin
Norvell
Pearson
Rinke
Shands
Stephens
Swanson
Ware

Enter <CR> to continue: <Control-P>

QUIT.

Do you wish to abort this procedure? Y <return>

do you wish to retain the partially selected table? N <return>

Specify A9 a second time in order to display the list of organizations. Notice what happens when a lower case letter instead of a capital is used:

> A9 <return>

Enter I for list of individuals or O for list of organizations >>
o <return>

Conversion of data item not possible.

Record: COOPERATOR-RECORD

Item: COOPERATOR-CLASS

Try again. Start with A9 and this time use a capital O:

> A9 <return>

Enter I for list of individuals or O for list of organizations
>> O <return>

COOPERATOR-LAST-NAME

//Agri-Bus. Consulta
//Agr Attache-Bogota
//Agronomy, NDSU
//Chi-Lin Ag For Ac
//Americus PMC-SCS
//Con Tec Ag-Cambodi
//Arthur Yates & Co.
//Dep Ag Tec Ser-Pre
//Asian Veg. Res. &
//Min Agr Gan-Asunc
//Austral. Wht. Coll
//Min Agr-Santa Cruz
//Beijing Agr. Univ.
//Rockefeller Found.
//Big Flats PMC-SCS
//Bismarck PMC-SCS
//Botanical Res. Uni
//Bridger PMC-SCS
//CIMMYT
//Cape May PMC-SCS
//Chitedze Agr. Res.

Enter <CR> to continue: <Control-P>
QUIT.

Do you wish to abort this procedure? Y <return>
do you wish to retain the partially selected table? N <return>

All of the nine options which are now part of the ACC menu have been described. The next option COOP will provide information about individuals who have participated in the GRIN system. You may begin by selecting MENU if you need to display the DATA Menu, or you may simply enter COOP.

THE COOP OPTION

The COOP Menu has three options for retrieving information about the people who have made contributions to or who are actively involved in the various areas of the GRIN databank and database system. These people are called cooperators.

The first option, C1, lists the names of the cooperators; the second option, C2, provides additional information about each of these people, as specified; the third option, C3, provides information about the interest groups in which an individual cooperator is involved.

The next few pages will contain examples showing how to display a list of cooperator names and then retrieve specific information about individual cooperators.

If you have not already done so, enter COOP:

>COOP <return>

GRIN COOPERATOR SELECTION OPTIONS

OPTION	QUERY GENERATED
C1	Lists all the COOPERATORS in the GRIN system
C2	Select a particular COOPERATOR by last name
C3	List the Interest Groups a COOPERATOR belongs to

MENU Back up to main menu QUIT Terminate query session

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>

COOP OPTION C1

Select option C1 for a list of cooperators. You will be asked to designate a starting point. To get a precise location, you may use up to three letters; the first must be a capital and the others lower case. If you want to begin at the beginning of the list, use A or Aaa, as shown below:

> C1 <return>

Enter Alphabetic beginning point of list. Example: Jon

>> Aaa <return>

Table DATA already exists. Do you wish to overwrite it?

Y <return>

GRIN Cooperator Listing

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Telephone Number	Last Name	First Name	Region
	Abbott	Mr. Dick	NCR
	Abdallah	Dr. Mounir	NCR
	Ackerman	Dr. William L.	NER
	Alexander	Dr. C. W.	NCR
	Andersen	Dr. R. L.	NCR
	Anderson	Mr. Dean C.	NCR
	Arny	Dr. D. C.	NCR
	Asay	Prof. K. H.	NCR
	Augustine	Dr. Jim	SR
	Ayers	Dr. J. E.	NER
	Baker	Dr. L. R.	NCR
	Ball	Allen	SR
	Barber	Mr. Jimmy L.	NCR
	Barker	Dr. R. E.	NCR
	Barksdale	Dr. T. H.	NER
	Barman	Mr. R. J.	NCR

Enter <CR> to continue: <Control-P>
QUIT.

Do you wish to abort this procedure? Y <return>

do you wish to retain the partially selected table? N <return>

>

Notice that you have the opportunity to save partially selected tables as well as full ones. The above "N" response means that you do not wish to save the information.

The final column (Region) lists the geographical regions in which each cooperator works; for example, NER-Northeast Region, WR-Western Region, NCR-North Central Region, and SR-Southern Region. In order to find the specific organization to which the cooperator is attached, you must use option C2.

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COOP OPTION C2

If you continue through the list of cooperators, you will find the names of Dr. Alan K. Stoner, Chairman of the Plant Genetics and Germplasm Institute and of Mr. Jimmie D. Mowder, the GRIN Database Manager. Perhaps you would like to know how to contact these cooperators.

As long as you know the correct spellings for their last names, it is not necessary to locate them in the initial list. In order to retrieve specific information about Dr. Stoner or Mr. Mowder, you may use both C2 and C3. Begin by entering C2:

```
-----  
> C2 <return>  
Enter cooperator last name >> Stoner <return>
```

```
Table DATA already exists. Do you wish to overwrite it?  
Y <return>
```

GRIN Cooperator Review

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```
First name: Dr. Allan K.  
Last name: Stoner  
Organization: Status: NEW  
Address: Plant Genetics/Germplasm Class: IND  
Room 127 Bldg 001 - West Update logon: RTB  
BARC - West Update date: 11/29/82  
City: Beltsville  
State: MD Zip code: 20705  
Country: Region: NER  
Phone:
```

```
-----  
In order to retrieve similar information about Mr. Mowder,  
repeat the process, beginning with C2:
```

```
-----  
> C2 <return>  
Enter cooperator last name >> Mowder <return>
```

```
Table DATA already exists. Do you wish to overwrite it?  
Y <return>  
-----
```

```
-----
GRIN Cooperator Review                               Feb 21, 1985
                                                    Page      1
First name:  Jimmie
Last name:   Mowder                               Status:  OLD
Organization: GRIN                               Class:  IND
Address:     USDA/ARS/PGGI/DBMU                  Update logon: JIMMY
             Bldg. 001, Room 130                 Update date:  2/16/84
             BARC-West
             City:  Beltsville
             State: MD                               Zip code:  20705
Country:     USA                                Region:   NER
Phone:       301 344-3318
-----
```

COOP OPTION C3

Finally, the third option allows us to look at the interest groups in which a cooperator is involved. Some or all of the information in these listings may appear to be coded. Each listing is prepared in accordance with criteria established and understood by the unit in which the cooperator is involved. Enter C3 followed by the cooperator's last name. Information about Dr. Stoner has been retrieved in the example below:

```
-----
> C3 <return>
Enter Cooperator last name >> Stoner <return>
```

Table DATA already exists. Do you wish to overwrite it?

Y <return>

Virtual record count: 1-2-3

COOPERATOR MEMBERSHIP

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Name: Stoner Dr. Allan K.

GROUP	ROLE
DT	
All Inclusive	
Appendix C	

Enter <CR> to continue: <return>

You may again return to the DATA menu in order to select the next series of options, or you may go directly to EVAL.

THE EVAL OPTION

The "GRIN Crop Evaluation data selections" option, **EVAL**, provides you with a relatively simple way to select a group of plants which meet a set of criteria that you specify.

These menus permit you gradually to narrow focus until you find the particular plant materials you want. Before entering **EVAL**, you should identify a specific crop collection through the Catalog of Grin Services (COGS).

You need to know which collection site or sites have the plants materials you want. You could, of course, look at each of the menus listed in **EVAL**--you may want to do that anyway--but since COGS provides a tidy package that does a lot of work for you, check it first.

COGS first provides a complete list of plant materials arranged by collection sites. When you ask for additional information about a particular plant collection, COGS provides a report which includes a list of the characteristics by which each group of plants is evaluated, the location of the collection site, the name of the curator, approaches to specialized queries, samples of data, and other information. See the COGS section of this manual for more information.

If information about a collection site has recently been added to the GRIN system, you may not find it in COGS. Site S-9 (Experiment, Georgia), for example, is listed in **EVAL** but as of March 1985 it had not yet been catalogued in COGS.

The list of sites in **EVAL** is the most current. Once you have identified the sites which have plant collections you want, you are ready to select from the first set of menus.

The methods used to select particular plant materials by specifying conditions is explained fully in the tutorial. See Case Studies two through five (2-5). This section of manual shows you how to go through the menus and provides two short examples of the selection process. Begin by entering **EVAL**, as shown below:

```
>EVAL  <return>
```

SITE SELECTIONS FOR CROP EVALUATION QUERIES

OPTION SITE

- S1 Crop Advisory Committee (CAC) datasets
S2 North Central Region Plant Int. Sta. (NC-7) - Ames, Iowa
S3 Southern Region Plant Intro. Station (S-9) - Experiment, Ga
S4 Western Region Plant Intro. Sta. (W-6) - Pullman, Wash.
S5 Northeast Region Plant Intro. Sta. (NE-9) - Geneva, N.Y.
SX List of GRIN "SUPPLY SITES"
SS Show details about a particular SUPPLY SITE you choose

MENU Back up to main menu QUIT Terminate query session

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>

Based on information from COGS, a Brassica collection is located at the "North Central Region Plant Int. Sta. (NC-7) - Ames, Iowa (S2)." Select option S2 from the above list. It will display the list of crops for site NC-7. Following the single prompt, enter S2:

> S2 <return>

NC-7 CROP EVALUATION QUERIES

OPTION	CROP	OPTION	CROP
NC1	Alfalfa	NC2	Beta
NC3	Brassica	NC4	Corn
NC5	Cucumis	NC6	Cucurbita
NC7	Daucus	NC8	Forage Legumes
NC9	Grasses	NC10	Helianthus
NC11	Lathyrus	NC12	Melilotus
NC13	Tomato		

MENU Back up to main menu QUIT Terminate query session

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>

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The Brassica collection is available through option NC3 listed in the left column of the preceding menu. As soon as this option is entered, GRIN automatically provides three opportunities to enter descriptor conditions specifying which plants should be selected.

If you want to select the entire NC7-BRASSICA collection, ignore the requests for conditions and simply respond with carriage returns. If, at any time during the selection process, you decide that you have enough samples to work with, you may use the Break key (Control-P) to stop the process.

Some collections are very large; for example, beans and grass each have about 9,000 records. You may be satisfied with 1,000. It is better to begin this initial selection process with some criteria in mind so that the 1,000 plants you select bear a relationship to your specific interests.

In the tutorial, the Brassica researcher is interested in plants with strong harvest vigor. He, therefore, begins by selecting plants from the NC7-BRASSICA collection, which have been evaluated for harvest vigor, since those which have not been evaluated are of little interest to him. The crop designation and conditions are entered, as follows:

>NC3 <return>

Enter AND and conditions, or <cr>. Maximum 160 characters

>> AND HARV-VIG1>0 AND HARV-VIG2>0 <return>

continue conditions or <cr>

>> <return>

continue conditions or <cr>

>> <return>

Virtual record count: [counts 1 to 466]

Total number of virtual records: 466

Enter DISPLAY USING NC7-BRASSICAn where n is the report number 1 thru 5
>>

Notice that 466 plant records have been selected. GRIN now allows you to display data describing these records. Responding to the above command, retype the information provided but substitute an appropriate report number for "n."

Since harvest vigor is part of report number 2, use number 2. See TUTORIAL (Page III-1-12) or COGS if you need information about report formats. Enter the command, as follows:

 Enter DISPLAY USING NC7-BRASSICA n where n is the report number 1 thru 5
 >>DISPLAY USING NC7-BRASSICA2 <return>

NC-7 Brassica Characteristic Data Report 2

ID NUMBER	BLOOM VIGOR2	BLOOM VIGOR1	HARV VIGOR2	HARV VIGOR1	LEAF NUM1	LEAF NUM2	LEAF SIZE1	LEAF SIZE2
PI 131249	0	0	1	1	0	0	0	0
PI 165608	0	0	1	1	0	0	0	0
PI 166063	0	0	1	1	0	0	0	0
PI 169057	0	0	1	1	0	0	0	0
PI 169059	0	0	1	1	0	0	0	0
PI 169060	0	0	1	1	0	0	0	0
PI 169061	0	0	1	1	0	0	0	0
PI 169064	0	0	1	1	0	0	0	0
PI 169066	0	0	1	1	0	0	0	0
PI 169067	0	0	1	1	0	0	0	0
PI 169068	0	0	1	1	0	0	0	0
PI 169069	0	0	1	1	0	0	0	0
PI 169070	0	0	1	1	0	0	0	0
PI 169074	1	1	1	1	0	0	0	0
PI 169075	1	1	1	1	0	0	0	0
PI 169076	1	1	1	1	0	0	0	0
PI 169077	1	1	1	1	0	0	0	0

Enter <CR> to continue: <Control-P>

You could go on, displaying this information for all of the 466 plants, and you could display the information from the four other reports as well.

At this point you might also decide to save the file and transfer it to INFO where you can reselect for tighter criteria. These alternatives are discussed elsewhere.

Next, look at the menus of the other sites to determine whether or not they have Brassica plants among their holdings. Enter each of the S options in sequence, as follows:

> S1 <return>

CROP ADVISORY COMMITTEE DATASET QUERIES

OPTION QUERY GENERATED

Sorry CAC datasets not yet in place

MENU Back up to main menu

QUIT Terminate query session

VERSION 2.0

> S3 <return>

S-9 CROP EVALUATION QUERIES

OPTION	CROP	OPTION	CROP
S91	Brassica	S92	Cajanus
S93	Cantaloupe	S94	Castor
S95	Cowpea	S96	Cucurbita
S97	Eggplant	S98	Gourds
S99	Grasses	S910	Guar
S911	Legumes	S912	Luffa
S913	Millet	S914	Miscellaneous
S915	Mungbean	S916	Okra
S917	Ornithopus	S918	Peanut
S919	Peppers	S920	Sesamum
S921	Sorghum	S922	Trifolium
S923	Vicia	S924	Watermelon
S925	Wingbean		

MENU Back up to main menu

QUIT Terminate query session

VERSION 2.0

> S4 <return>

W-6 CROP EVALUATION QUERIES

OPTION	CROP	OPTION	CROP
W61	Bean	W62	Cabbage
W63	Chickpea	W64	Grasses
W65	Lentil	W66	Lettuce
W67	Safflower	W68	Vicia

MENU Back up to main menu

QUIT Terminate query session

VERSION 2.0

> S5 <return>

NE-9 CROP EVALUATION QUERIES

OPTION QUERY GENERATED

Sorry NE-9 datasets not yet in place

MENU Back up to main menu

QUIT Terminate query session

VERSION 2.0

> S6 <return>

ERROR:

"s6"

--

Found NAME; expected one of the following:

ABOrt	COpy	CREate	DELeTe	DEscribe	DISAble	Display
EDit	ENABle	END	ERASE	EXECute	HElp	JOIN
LIst	MODify	PRint	PROduce	Quit	RELEASE	REMOve
REName	SAve	SElect	SET	Sort	SPool	START
STATus	STOre	UNLock	USE			

If you get an error message like this one, suspect that S6 is not an option. If we go back and check EVAL, there are five numbered options and two with letters. The options with letters, SX and SS provide information about each of the supply sites. Display the EVAL menu, as follows, and then go on with SX for a list of supply sites.

GRIN PUBLIC USERS MANUAL

>EVAL <return>

SITE SELECTIONS FOR CROP EVALUATION QUERIES

OPTION	SITE
S1	Crop Advisory Committee (CAC) datasets
S2	North Central Region Plant Int. Sta. (NC-7) - Ames, Iowa
S3	Southern Region Plant Intro. Station (S-9) - Experiment, Ga
S4	Western Region Plant Intro. Sta. (W-6) - Pullman, Wash.
S5	Northeast Region Plant Intro. Sta. (NE-9) - Geneva, N.Y.
SX	List of GRIN "SUPPLY SITES"
SS	Show details about a particular SUPPLY SITE you choose

MENU Back up to main menu QUIT Terminate query session

VERSION 2.0
>SX <return>

GRIN Supply Site Listing

SITE CODE	SITE NAME	STATE	REGION
CANE	USDA Sugarcane Collection	FL	SR
COTTON	Natl. Coll. - Cotton Germpl.	TX	SR
CR-COR	NCGR - Corvallis	OR	WR
CR-DAV	NCGP - Davis	CA	WR
CR-GEN	NCGP - Geneva	NY	NE
CR-MIA	NCGR - Miami	FL	SR
CR-MYA	NCGR - Mayaguez	PR	SR
GUST	GRIN User Services Training	MD	NER
IR-1	Interr. Potato Intr. Sta.	WI	NCR
NA	U. S. National Arboretum	D. C.	NER
NC-7	North Central RPIS	IA	NCR
NE-9	Northeastern RPIS	NY	NER
NSSL	National Seed Storage Lab	CO	WR
PECAN	USDA Pecan Collection	TX	SR
PIO	Plant Introduction Office	MD	NER
S-9	Southern RPIS	GA	SR
SGC	Small Grains Collection	MD	NER
SOY-N	USDA Soybean Collection-North	IL	NCR

Enter <CR> to continue: <return>

GRIN Supply Site Listing

SITE CODE	SITE NAME	STATE	REGION
SOY-S	USDA Soybean Collection-South	MS	SR
W-6	Western RPIS	WA	WR

The final option, **SS**, gives details about any of the supply sites that you specify. Enter **SS**, followed by the site code, which is found in the left column in the preceding menu.

> **SS** <return>

Enter Site Code. Example: NC-7 >> NC-7 <return>

Table DATA already exists. Do you wish to overwrite it?

Y <return>

Virtual record count: 1

Total number of virtual records:1

GRIN Supply Site Description

Mar 11, 1985

Page 1

Site Code: NC-7

North Central RPIS

USDA/ARS

Plant Introduction Station

Iowa State University

Ames, IA

50011

United States

Phone Number: 515-294-3255

Region: NCR

Curator (last, first): Clark

, Ray

Enter <CR> to continue: <return>

>

Once again you may return to the DATA menu in order to select the next series of options, or you may go directly to **DST**.

THE DST OPTION

The DST option provides a direct summary of information about each DATASET in the GRIN system. This information is used to construct the COGS Catalogue of the GRIN system.

Although COGS presents dataset information in the most easily readable formats, the COGS summaries have to be constructed from the data available in DST; therefore, COGS is not the most current nor the most complete source of summary information. Use COGS to gain a general understanding of the crop datasets; then check the information in DST to determine whether any changes have been made. Enter DST, as follows:

> DST <return>

GRIN EVALUATION DATASET DESCRIPTIONS

OPTION QUERY GENERATED

- | | |
|----|---|
| D1 | Lists all the DATASETS in the GRIN database. |
| D2 | Lists the DESCRIPTORS for a DATASET you specify. |
| D3 | Lists the CODES for the DESCRIPTOR you specify. |
| D4 | Lists the CODES for all DESCRIPTORS of the DATASET you specify. |

MENU Back up to main menu QUIT Terminate query session

VERSION 2.0

>

The first option, D1 lists all of the DATASETS in the GRIN database and provides the crop name, site location, formal query name used to retrieve information about the crop, number of observation records, and number of descriptor categories (Items) for each. The second option, D2, displays a list of the DESCRIPTORS for any DATASET you specify. This option provides an exact descriptor name and technical information about its format.

GRIN PUBLIC USERS MANUAL

The third option, D3, lists the CODES and CODE VALUES for any DESCRIPTOR you specify. The fourth and final option, D4, lists the CODES for all DESCRIPTORS in the DATASET you specify.

These options are easy to execute. Simply enter the appropriate option and specify a DATASET or DESCRIPTOR name as requested. On the following pages you will find examples for executing each option and parts of pages of sample data so that you will know what to expect.

DST OPTION D1

The first option, D1, displays information about all of the crop datasets available in the GRIN databank. Enter D1, as follows:

>D1 <return>

GRIN Datasets
Characteristic Data

Page 1
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CAC Barley
Query name: BARLEY
Observations: 0 Items: 60

NC-7 Alfalfa
Query name: NC7-ALFALFA
Observations: 2100 Items: 61

NC-7 Beta
Query name: NC7-BETA
Observations: 330 Items: 40

NC-7 Brassica
Query name: NC7-BRASSICA
Observations: 845 Items: 36

NC-7 Corn
Query name: NC7-CORN

Enter <CR> to continue: <Control-P>
QUIT.

Do you wish to abort this procedure? Y <return>
do you wish to retain the partially selected table? N <return>

DST OPTION D2

The second option, D2, displays a list of and technical information about the Descriptor Categories for each crop dataset. Information about the descriptor categories for NC7-BRASSICA may be displayed, as shown below:

NOTE: Only the first page is displayed.

> D2 <return>

Enter DATASET-QUERY-NAME in all CAPITALS. Example: W6-BEAN
>> NC7-BRASSICA <return>

GRIN Dataset Descriptors
Characteristic Data

Page 1
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NC7-BRASSICA

Query Name	Type	Min Value	Max Value	COBOL Format
AVAIL	CHARACTER			X(1)
PI-NO	INTEGER*4			999999
GENUS	CHARACTER			X(4)
SPECIES	CHARACTER			X(6)
SOURCE	CHARACTER			X(5)
CULT-REM	CHARACTER			X(25)
PLT-TYPE	CHARACTER			X(2)
GRW-HAB2	INTEGER*2	1.00	9.00	9(1)
GRW-HAB1	INTEGER*2	1.00	9.00	9(1)
DYS-FLWR	INTEGER*2			999
FLWR-COL	CHARACTER			X(8)
FLWR	CHARACTER			X(3)
SDLG-VIG2	INTEGER*2	1.00	9.00	9(1)
SDLG-VIG1	INTEGER*2	1.00	9.00	9(1)

Enter <CR> to continue: <return or Control-P>

If you want more detailed information about any descriptor category, you may ask for it here. Unfortunately, there is no way to select a particular category. It is necessary to scroll through each in turn until you reach the one you want.

On the next page, you will find the first page of information and the page which lists the first harvest vigor category which will be used in executing the following option: D3. Enter DISPLAY USING DESCRIPTOR, as follows:

>>DISPLAY USING DESCRIPTOR <return>

AVAIL
NC7-BRASSICA

Page 1
Mar 08, 1985

Name: AVAIL

Descriptor category:

Query name: AVAIL

Descriptor number: 1

Subschema name: OBV071

Schema name: OBS-VALUE-071

COBOL format: X(1)

FTN format: A1

Type: CHARACTER

Edit check: LIST

Character length: 1

Number of states: 2 Minimum value:

Maximum value:

AVAILABILITY

Enter <CR> to continue: <return>

{Here, sixteen pages of descriptor information are omitted.
Use a carriage return, <return>, at the end of each page to
display the next one.}

HARV-VIG1
NC7-BRASSICA

Page 18
Mar 08, 1985

Name: HRV-VIG1

Descriptor category:

Query name: HARV-VIG1

Descriptor number: 18

Subschema name: OBV009

Schema name: OBS-VALUE-009

COBOL format: 9(1)

FTN format: I2

Type: INTEGER*2

Edit check: RANGE

Character length: 0

Number of states: 2 Minimum value: 1.00

Maximum value: 9.00

MINIMUM HARVEST VIGOR EXPRESSED 1-9,
WHERE 1 IS GOOD AND 9 IS POOR.

Enter <CR> to continue: <Control-P>

Remember, using the Control-P sends a BREAK command to GRIN,
allowing you to stop displaying additional data.

DST OPTION D3

The third option, D3, displays the codes, where available for a particular Descriptor Category, such as the first harvest vigor category (HARV-VIG1) for NC7-BRASSICA, as shown below:

> D3 <return>

Enter DATASET-QUERY-NAME. All CAPS >> NC7-BRASSICA <return>

Enter DESCRIPTOR-QUERY-NAME. All CAPS >> HARV-VIG1 <return>

Table DATA already exists. Do you wish to overwrite it?

Y <return>

GRIN Descriptor Codes
Characteristic Data

Page 1
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HARV-VIG1
NC7-BRASSICA

Code Value	Definition
---------------	------------

1	GOOD
9	POOR

If you receive a message which states "NO CODES PRESENT", you might want to check COGS or the appropriate detailed descriptor record available from option D2 above.

In some cases a "NO CODES PRESENT", message appears when codes should be present. Check with the Database Management team if you encounter this problem and need help.

DST OPTION D4

In the preceding option, D3, you requested code values and definitions for each descriptor separately. In this fourth and final option, D4, allows you, by using this single command, to display all of the code information for the descriptor categories in a specified crop dataset, as follows:

> D4 <return>

Enter DATASET-QUERY-NAME. All CAPS >> NC7-BRASSICA <return>

Table DATA already exists. Do you wish to overwrite it? Y <return>
Virtual record count: 1 . . . 43
Total record count: 43

GRIN Descriptor Codes
Characteristic Data

Page 1
Feb 21, 1985

AVAIL
NC7-BRASSICA

Code Value	Definition
	AVAILABLE
*	NOT AVAILABLE

Enter <CR> to continue: <Control-P>
QUIT.

Do you wish to abort this procedure? Y <return>
do you wish to retain the partially selected table? N <return>

This concludes the sample material from the DST option. The next option is miscellaneous MISC. Again you may display the main menu by entering MENU, or you may immediately request the MISC option.

THE MISC OPTION

The GRIN Database Management Unit has provided you with numerous programs for easily selecting and displaying certain kinds of information. These programs are described in this manual in the sections for COGS, DATA including ACC, COOP, EVAL, and DST, and under INFO at the end of the tutorial.

Sometimes these programs do not provide the best or even a satisfactory solution to a particular research problem. If you or someone in your organization is experienced in programming, you may prefer to write your own program for retrieving or displaying the information you want.

The Miscellaneous (MISC) option is included to help you set up your own programs. The first option within MISC, M1, allows you to display a list of exact names for the various subschemas available within the active database. If you want information about the country of origin for a particular plant, for example, you need to know the exact name of a subschema which allows you access to the record which contains the information you want.

The second option within MISC, M2, displays a list of records for any of the subschemas in M1 that you specify. Knowing which records are part of a particular subschema will allow you to decide whether or not the subschema can provide you access to the information you want. For example, if you want information which is contained on an accession record, you want to be certain that the subschema you choose allows you to retrieve information from the accession record.

The third option within MISC, M3, provides a simplified way for you to retrieve database information which is not available thorough the EVAL program; for example, information from the accession record.

Specialized queries usually require several lengthy and complicated **USE** and **UNLOCK** statements. These statements as they apply to each particular crop collection are described on the first page of each of the crop reports in COGS. M3 allows you to set up most special queries without having to use these complex use and unlock procedures.

In order to use any one of the three options described, first enter MISC from the Grin Query Menu:

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> MISC <return>

AD HOC SELECTION ASSISTANCE MENU

OPTION	ACTION INITIATED
--------	------------------

M1	Lists the SUBSCHEMAS of SCHEMA GRIN1-0
----	--

M2	Lists the RECORDS of a SUBSCHEMA you choose. Enter: M2 subschema-name <cr>. Example: M2 CPUBLIC <cr>
----	---

M3	Executes a query prompting for SUBSCHEMA, variables and target RECORD name.
----	--

MENU Back up to main menu

QUIT Terminate query session

VERSION 2.0

>

MISC OPTION M1

Notice that the subschemas in M1 are part of Schema GRIN1-0. Two other databases make up the GRIN system but are available only for specialized functions. The Glossary contains information about GRIN1-D and GRIN1-X. See GRIN1-0. To print your own list of subschemas from SCHEMA GRIN1-0, enter M1, as shown below:

> M1 <return>

MASTER

NC7-BRASSICA

FMAST

{Only part of this page is shown.}

NC7-TOMATO

NC7-GRASS

W6-FMAST

NC7-CORN

NC7-ALFALFA

PIO-STUFF

NC7-BETA

W6-PEA

W6-MASTER

NC7-MASTER

DST

OBSERVATION

NC7-FMAST

REPT

CPUBLIC

Enter <CR> to continue: <return to continue or Control-P to stop>

MISC OPTION M2

The next option, M2, allows you to look at the specific records for any one of the above subschemas. The MISC menu option suggests using, as an example, CPUBLIC, which is the last subschema listed above: (Example: M2 CPUBLIC <cr>) The example used below shows how to list the records for NC7-BRASSICA:

> M2 NC7-BRASSICA <return>
DBMS records of schema GRIN1-0, subschema NC7-BRASSICA.

ACCESSION-RECORD
ACC-SUPPLEMENTAL-RECORD
ACC-REID-RECORD
ACCESSION-GROUP-RECORD
SECONDARY-IDENTIFIER-RECORD
SUPPLY-SITE-RECORD
COOPERATOR-RECORD
COOP-GROUP-RECORD
MEMBERSHIP-RECORD
DONOR-LINK-RECORD
DATASET-RECORD
DESCRIPTOR-RECORD
CODE-RECORD
ENVIRONMENT-RECORD
ENV-NARRATIVE-RECORD
OBSERVATION-RECORD
FAMILY-RECORD
GENUS-RECORD
SPECIES-RECORD
FAMILY-SYNONYM-RECORD
BINOMIAL-SYNONYM-RECORD
GEOPOLITICAL-ACQUIRE-RECORD
Enter <CR> to continue: <return>

GEOPOLITICAL-ORIGIN-RECORD
GENERIC-ORDER-RECORD
SITE-CROP-RECORD
INVENTORY-RECORD
INV-GROUP-RECORD
INV-GROUP-LINK-RECORD
SUPPLIER-LINK-RECORD

MISC OPTION M3

The final option, M3, allows you to enter a request for special information without having to write your own **USE** and **UNLOCK** statements. This option provides a simplified version of the "ad-hoc query" programs which are described in COGS on the initial pages of each crop report. See, for example, the lower half of the "NC-7 BRASSICA REPORT MENU" on page III-5.

You need to know the **exact** subschema and descriptor names. They are listed through options **M1** and **DST**, as described above. In the example below, information from (**ALL**) of the descriptor records for one identification number will be requested. Enter **M3** and follow the prompts:

> M3 <return>

Enter subschema name

>> NC7-BRASSICA <return>

Enter ALL or specific descriptor names separated by commas

>> ALL <return>

Enter GRIN Record-name

>> OBSERVATION-RECORD <return>

Enter WHERE and conditions (max 160 chars) or <cr>

>> WHERE ACC-PRIMARY-IDENTIFIER EQ 'PI 271452' <return>

continue conditions or <cr>

>> <return>

continue conditions or <cr>

>> <return>

Virtual record count: 1

Total number of virtual records: 1

```
-----
ACCESSION-RECORD.ACC-PRIMARY-IDENTIFIER      PI  271452
ACCESSION-RECORD.ACC-SUBSPECIES
ACCESSION-RECORD.ACC-VARIETY
ACCESSION-RECORD.ACC-CULTIVAR
ACCESSION-RECORD.ACC-COMMON-NAME
ACCESSION-RECORD.ACC-DATE-RECEIVED
ACCESSION-RECORD.ACC-DATE-RELEASED
ACCESSION-RECORD.ACC-ENTRY-LOGONID           JAS
ACCESSION-RECORD.ACC-PRIMARY-SUPPLY-SITE      NC-7
ACCESSION-RECORD.ACC-INV-ID                  UNKNOWN
ACCESSION-RECORD.ACC-DATE-ENTERED            OCT  8, 1982
ACCESSION-RECORD.ACC-DATE-PI-ASSIGNED
ACCESSION-RECORD.ACC-DATE-TAXON-ASSIGNED
ACCESSION-RECORD.ACC-ATTRIBUTE-FLAG          NO
ACCESSION-RECORD.ACC-PIO-APPROVED-FLAG       NO
ACCESSION-RECORD.ACC-PIO-DONOR-HELD-FLAG     NO
ACCESSION-RECORD.ACC-PIO-CROP-CATEGORY       NONE
ACCESSION-RECORD.ACC-PIO-LIFE-FORM           UNKNOWN
ACCESSION-RECORD.ACC-PIO-FORM-RECEIVED       UNKNOWN
Enter <CR> to continue: <return>  or <Control-P>
-----
```

It is possible to limit the information you display to just one or more descriptor categories, like the identification number and the plant's Genus. In this case, locate the exact names of the descriptor categories, like **ACC-PRIMARY-IDENTIFIER** (first in the list above) and **GENUS-NAME** (from the last page of the list, not shown here). Enter them separated by commas, as instructed by the second prompt below.

After you execute this program, GRIN will display all NC7-BRASSICA plant identification numbers and their "GENUS-NAME"s, subject to the conditions you specified. You must specify the **DATASET-QUERY-NAME** and enclose it in quotes. "NC7-BRASSICA" is used in the example below. You may specify other conditions like **HARV-VIG1** and **HARV-VIG2**, also used in the example below.

If you specify a PI number, as shown above, the program would print only the PI identifier and Genus for that single record. If, on the other hand, you specify a particular value for other descriptors, such as values for the harvest vigor categories, the program would print identification numbers and common names for all NC7-BRASSICA plants which have the values you specify for **HARV-VIG1** and **HARV-VIG2**.

It is also possible to print identification numbers and other specified information for all 845 NC7-BRASSICA plants by entering carriage returns <return> instead of entering conditions. Enter **M3** and begin again as shown on the next page:

> M3 <return>

Enter subschema name

>> NC7-BRASSICA <return>

Enter ALL or specific descriptor names separated by commas

>> ACC-PRIMARY-IDENTIFIER, GENUS-NAME, HARV-VIG1, HARV-VIG2 <return>

Enter GRIN Record-name

>> OBSERVATION-RECORD <return>

Enter WHERE and conditions (max 160 chars) or <cr>

>> WHERE DATASET-QUERY-NAME = "NC7-BRASSICA" <return>

continue conditions or <cr>

>> AND HARV-VIG1 = 1 <return>

continue conditions or <cr>

>> AND HARV-VIG2 = 1 <return>

Virtual record count: 1 - 245

Total number of virtual records: 245

ACC-PRIMARY-IDENTIFIER	GENUS-NAME	HARV-VIG1	HARV-VIG2
PI 169057	Brassica	1	1
PI 169050	Brassica	1	1
PI 169060	Brassica	1	1
PI 169061	Brassica	1	1
PI 169064	Brassica	1	1
PI 169067	Brassica	1	1
PI 169068	Sinapis	1	1
PI 169069	Brassica	1	1
PI 169070	Brassica	1	1
PI 169074	Brassica	1	1
PI 169075	Brassica	1	1
PI 169076	Brassica	1	1
PI 169077	Brassica	1	1
PI 169078	Brassica	1	1
PI 169080	Brassica	1	1
PI 169081	Brassica	1	1
PI 169085	Brassica	1	1

Enter <CR> to continue: <Control-P>

MISC option M3 may be used in a variety of ways to select and display special information. The next DATA option provides basic information about the GRIN system. Unless you first wish to display the general menu, enter PRIM.

GRIN PUBLIC USERS MANUAL

THE PRIM OPTION

The PRIMOS utilities and status commands option, **PRIM**, gives you access to information about the GRIN system. Enter **PRIM** to display the main menu:

>PRIM <return>

PRIMOS UTILITIES AND STATUS COMMANDS

OPTION	ACTION INITIATED
P1	PRlMEs STATUS USERS command. Tells who is online.
P2	PRlMEs LD command. Lists the contents of your directory
P3	PRlMEs Message utility. Enter P3 USER-ID -NOW and the msg, as: P3 BELT -NOW <cr> I NEED HELP!!! <cr>
P4	PRlMEs TIME command. How long have you been logged on?
P5	PRlMEs DATE command. Lists todays date and the time
P6	PRlMEs USERS command. Tells how many users are online
MENU	Back up to main menu
QUIT	Terminate query session
VERSION	2.0
>	

If your programs are running very slowly, you might want to find out how many people are using the system (P6). If you need help and would like to send a message to one of the DataBase Management Unit (DBMU) team members, you can find out who is logged into the system (P1) and then send that person a message (P3). You can also list the contents of your directory (P2), find out how long you have been connected (P4), or display the current date and time (P5).

With the exception of sending messages, these programs are very simple and require only that you specify the option you want. Executing several of these options sequentially might require that you repeat **PRIM** before you enter the new option number.

You may not execute these commands in the middle of another program; however, you may exit a program at the earliest possible opportunity by using the BREAK key (Control-P) and then agree to terminate that program. After terminating your program, enter PRIM, as follows:

PRIM OPTION P1

The PRIM STATUS USERS command (P1) lists the identification codes for everyone using the system at the time the command is executed. These identification codes are not the passwords but the codes by which a user logs into the system.

Most of you will log in using PUBLIC. In addition to displaying id's, this option displays information identifying, by number, the space (port) through which each user is connected to the GRIN system and the devices being used in their procedures.

Below, DBMU members ROB, BELT, JANSEN, and MARK are logged into the system. A public user is logged in as PUBLIC.

>P1 <return>

User	No	Line	Devices
SYSTEM	1	asr	<SYSNW1>
LOCATE	3	1	<NEWSY2> <PACK0> <SYSNW1>
REGIS1	6	4	<PACK0>
BELT	7	5	<GRINWK> <SYSNW1>
DBMU	13	13	<DBMU>
JANSEN	14	14	<GRINWK>
SYSTEM	15	15	<SYSNW1>
BELT	17	17	<DBMU>
REGIS1	26	30	<PACK0> <NEWSY2> <SYSNW1>
PUBLIC	28	32	<DBMU><GRNDB1><GRNDB2><GRNDB3>
ROB	30	34	<GRNDB3>
ROB	32	36	<DBMU>
SEAEXT	43	51	<PACK0> <DATA1> <SYSNW1>
MARK	45	53	<IBPGR> <GRINSC> <SYSNW1>
NETMAN	65	nsp	<SYSNW1>
BELT	67	phant	<SCRTCH> <GRNDB1> <GRNDB2>
BSCMAN_DPTX	68	phant	<SYSNW1> SMLC00 (3)
BATCH_SERVICE	69	phant	<SYSNW1>
EM3270_DPTX	71	phant	<SYSNW1> (2)
SYSTEM	72	phant	<SYSNW1> (0)

>

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PRIM OPTION P2

The PRIM LD (P2) command is used to list the contents of your working directory. This command is used to find the names of the files you have created with the save (SAV) command. This information could be useful when you execute VIC or VIF because you might have to look for the correct filename. The following P2 command lists a series of files used in creating parts of this manual:

> P2 <return>

<GRINUS>PUBLIC (ALL access)

74 records in this directory, 78 total records out of quota of 0.

5 Files.

BRASSICX
LOGIN.CPL

BRASSICY
PINO

GLOSSARY

1 Segment Directory.

1 Directory.

BIN

>

PRIM OPTION P3

The PRIM Message command (P3) is used to send one line messages to other users who are currently logged into the system. Before using P3, you should find out who is on the system (P1). We would like to request that you limit your online requests to DBMU member BELT (John Belt). If BELT does not show up on the list of current system users you may call the DBMU at one of the listed phone numbers that display at login. To repeat: (301) 344-3318. Someone will help you.

Sending a message requires two steps within the PRIM Option P3:

First, enter: P3 [DBMU member's id] -NOW <return>.

Then send a one line message, like the following:

P3 BELT -NOW <return>

Help!! My query won't work. Please call (999) 555-1212 <return>

The following example further illustrates how P3 works:

```
-----  
> P3 BELT -NOW <return>  
WHATS THE DIFFERENCE BETWEEN SELECT AND ASELECT? <return>  
>  
-----
```

The response will appear on your screen as follows. Keep in mind that you will not receive a response until your message has been received and the respondent is able to answer you. There might be a delay, and your telephone number could be important.

In this case, the messages were prearranged, and no telephone number was necessary. A second interchange then may take place in the same way, and conversation is established in one line increments, as follows:

```
-----  
>  
*** BELT (user 17 on SYSB) at 14:28  
SELECT is used to initially open and access an INFO data file...  
  
*** BELT (user 17 on SYSB) at 14:28  
and ASELECT is used to negate one or more subsequent RESELECTS.  
  
P3 BELT -NOW <return>  
THANKS--- <return>  
>  
-----
```

Longer messages may be sent one line at a time by repeating the above steps of the procedure for each line of the message.

PRIM OPTION P4

The PRIM TIME command (P4) tells you how much time you have spent on the GRIN system. Simply enter option P4, as follows:

```
-----  
> P4      <return>  
Time used: 01h 17m connect, 07m 08s CPU, 07m 44s I/O.  
>  
-----
```

PRIM OPTION P5

The PRIM DATE command (P5) gives the current date and time in Beltsville, Maryland. Again, simply enter option P5, as follows:

```
-----  
> P5      <return>  
21 Feb 85 08:28:28 Thursday  
>  
-----
```

PRIM OPTION P6

The PRIM USERS command (P6) displays the number of users currently logged into the GRIN systems. Sometimes this information provides a quick explanation to a slow response time. When more than 20 users are logged in at the same time, processing information often becomes slower. Again, simply enter option P6, as follows:

```
-----  
> P6      <return>  
Users = 22  
>  
-----
```

These six commands provide general information about the GRIN system. Remember, you must quit whatever other program you are involved in before executing these commands. The next option provides the opportunity for you to save files. Enter SAV.

THE SAV OPTION

Each time you select data, it is written into a Table called **TABLE DATA**, which is located in GRIN's main memory. You may record this information on your own printer or save it by means of a disc or memory bank within your own computer system. It is unlikely, however, that you will be able to change the format in any meaningful way.

GRIN provides a method for you to transfer information which has been retrieved from the databank into a special system called **INFO** where it may undergo additional selection processes and be reformatted in a variety of ways. In order to transfer a Table into **INFO**, it must first be **saved** into a file before any other selection processes are carried out.

Saving one Table of information is a simple procedure. GRIN has prepared a file called **DATA** which automatically accepts the information you are currently working on. The information, located in GRIN's main memory in **Table DATA**, may be saved in **File DATA** as follows:

> SAV <return>

Table DATA saved to <GRINUS>PUBLIC>UDIR>US0028>DATA.

Note: A description of each saved table has been written to a file named 'tree-name.FD', where 'tree-name' is the file to which the table was saved.

>

This message tells you that the information in **Table DATA** has been saved in a file called **DATA** within directory **PUBLIC>UDIR>US0028>** on a disc called **<GRINUS>**. The important fact to remember is the last word in the GRIN response, **DATA**. It is the name you must use to recall the information in order to transfer it to **INFO**.

Except for the first time, each time you carryout a program in GRIN, you will receive the following message: "Table **DATA** already exists. Do you wish to overwrite it?" This message warns you that the information you selected in the preceding program is about to be replaced by these new selections.

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You might still have an opportunity to save the old information before going on. See the Tutorial for a discussion of this possibility, Page III-61. If you have already saved the information or if you have no need to do so, merely respond "Yes" to the message and go on with the selection process. The new material will then replace the old in Table DATA.

If you want to save more than one table of information, you must specify a name for the second and subsequent files. GRIN automatically asks you for this name. Notice below that GRIN now asks you if you wish to overwrite File (not Table) DATA.

If you decide the first saved file is no longer important--perhaps the new information is more accurate or precise--you may respond "Yes" and the new data merely replaces the old in File DATA. If you want to save both files, however, respond "No" and provide another name for the second file, as follows:

> SAV <return>

File DATA already exists. Do you wish to overwrite it? N <return>

Enter another file name: BRASS-S <return>

Table DATA saved to <GRINUS>PUBLIC>UDIR>US0028>BRASS-S.

Note: A description of each saved table has been written to a file named 'tree-name.FD', where 'tree-name' is the file to which the table was saved.
>

Notice again that the file name which you will use to retrieve the information is the final one on the line explaining where Table DATA was saved. In this case, it is BRASS-S.

Use the same process to save additional files, but provide new names for each subsequent file. You may later recall any of these files for loading into the INFO system. The final option to be discussed is INIT which gives you a rapid way to recover from serious system errors. Enter INIT.

THE INIT OPTION

The final option on the GRIN QUERY MENU, **INIT**, is very simple to use but is important because it allows you to correct serious system errors. Keep in mind that any information which you have not saved will be lost. The **INIT** command automatically closes down the current session and performs the procedures necessary to open a new session.

If you receive a message something like the following--**FATAL ERROR DBMS SCHEMA/SUBSCHEMA EXITED**--or if the system is not working properly--you may be getting peculiar information for example--you should try the **INIT** procedure. Although this procedure might not correct every problem, it should handle most of them. You can feel fairly certain that the procedures have worked if the GRIN QUERY MENU appears, as follows:

>**INIT** <return>

Virtual record count: 1

Total number of virtual records: 1

GRIN QUERY MENU OPTIONS

OPTIONS	ACTIONS
ACC	GRIN Passport data selections
COOP	GRIN Cooperator selections
EVAL	GRIN Crop Evaluation data selections
DST	GRIN Dataset descriptions
MISC	Create your own ad hoc selection
PRIM	PRIMOS utilities and status commands
SAV	SAVE your query output to PRIMOS level. First SAVED file called DATA. You name 2nd thru Nth
INIT	Initialize these menus and procs following error

MENU = Redraw this menu HOW = Short Instruction QUIT = Terminate session
VERSION 2.0

>

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In addition to the eight procedures reviewed, the bottom line of the GRIN QUERY MENU reminds you that the command **MENU** will return you to the same menu, that the **HOW** command provides short instructions for the use of the menu, and the **QUIT** command terminates the session and returns you to the GRIN FUNCTIONS Menu.

Finally, recall that **VERSION 2.0** indicates that this particular menu is the second version of the GRIN QUERY MENU. You might remember **VERSION 1.0** as the old **CHAR** option which was replaced by **DATA** in the GRIN FUNCTIONS Menu.

In the next section of this manual, the Catalog of the GRIN System (**COGS**) will be discussed.

SECTION VI

THE CATALOG OF THE GRIN SYSTEM (COGS)

COGS provides an opportunity to explore the kinds of information available in the GRIN databank.

Most of the information recorded in COGS is a summary of data which is available elsewhere in the system. Some catalogs are updated automatically as new data is entered. COGS requires separate action for updating; therefore, the information is current only as of the date indicated.

Most of the information recorded in COGS especially the numerical data, is available elsewhere. Up-to-date information may be retrieved when needed by using the DATA option from the GRIN FUNCTIONS menu. See DATA SELECTIONS (Section V, OPTION DST, Page V-28) of this manual for additional information about this option. In spite of this limitation, COGS provides a well organized general summary for anyone who is unfamiliar with the GRIN system or who wants general information about its database.

In addition, COGS provides the most complete information about the crop Descriptors and the National Plant Germplasm System (NPGS) sites as well as a "how to" description for COGS.

A researcher beginning work on a particular crop should immediately print a copy of the complete list of the Descriptor categories for the crop, including their definitions and ranges of value. This information is available through Option 2 of COGS. The similar list, available through the DATA DST option, contains only a brief summary of the same information about each category, although it is updated more frequently.

As you progress through COGS, you will be presented with a number of menus. Each menu lists several options for reports about particular information. The options are usually numbered in the left column. To request a particular report, enter its option number and press the carriage return.

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There are three standard commands which allow you to move backward to earlier menus:

UP	-	Returns you to the preceding menu
R	-	Returns you to the main COGS menu
Q	-	Returns you to the GRIN FUNCTIONS menu

Some of the reports and menus are longer than the 23 lines which can be displayed on many CRT screens. These reports and menus are displayed one screen at a time followed by a **MORE?** prompt. Simple carriage returns allow you to scroll through the report. If at any time you wish to stop and go on to another activity, enter **n** or **N** and you will be given an opportunity to start a new activity.

NOTE: Any response other than **n** or **N** or **no** will be interpreted as a carriage return and cause the current activity to continue.

If you have logged in and responded **COGS** to the function code request on the main menu, the **COGS** menu should be displayed. Begin with option number 3, which will provide a system status summary. Press 3 followed by a carriage return, as indicated below:

FUNCTION CODE: **COGS** <return>

```
*****
**          CATALOG OF          **
**      GRIN SYSTEM (COGS)      **
*****
```

COGS contains some summary information about GRIN including descriptions of the various crop specific datasets contained within the **DATA** option, information about our curation sites and system summary statistics. COGS options are as follows:

OPTION	REPORT
1	Characteristic Data Catalogs
2	NPGS Sites
3	GRIN System Status
4	How to use COGS

Please enter option number or **Q** (QUIT) : **3** <return>

GRIN SUMMARY REPORTS

Option	Summary Report
-----	-----
1	Total Accessions
2	Database Totals By Site
3	Database Totals By Genus
4	Database Totals By Source
5	Database Totals By Family
6	Genera By Maintenance Site

Enter option, UP (previous menu) or Q (QUIT) :

If you have pressed 3, as indicated above, the GRIN Summary Reports menu should be displayed. This summary classifies the genetic plant materials described by the system in six ways:

1. the total number of accessions or separate plant identification numbers;
2. the total number of plant identification numbers maintained by each of the Regional Plant Introduction Stations (NPGS curation sites);
3. the total number classified by genus;
4. the total number acquired from or collected in each of the source countries;
5. the total number classified by family name;
6. and last, the total number from each genus maintained by each of the various NPGS sites.

We will move through each summary option in sequence. Begin by displaying the total number of accessions; press 1:

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Enter option, UP (previous menu) or Q (QUIT) : 1 <return>
=====

GRIN 1 - 0 CONTENTS as of 1/14/85
=====

TOTAL ACCESSIONS = 270843

THIS REPORT CREATED BY THE GRIN DBMU

This report shows that GRIN has a total of 270,843 accessions, plants which are described as part of its holdings. This number reflects the total as of 1/14/85. The date and number of accession records displayed on your screen may differ, reflecting more current information.

In this part of the program, we do not have to return to the main menu each time before displaying the other options. Press 2 and the second option, which classifies the data totals by site, will be displayed, as follows:

Hit RETURN to continue : 2 <return>
=====

GRIN1-0 CONTENTS BY SITE as of 1/14/85
=====

Unknown.....	6121
Glendale Plant Introduction Station.....(GD)....	182
Interregional Potato Introduction Station....(IR-1)..	1103
Nat. Clonal Germplasm Repository - Miami.....(MIAM).. <td>288</td>	288
Mayaguez Instit. for Tropical Agriculture....(MITA).. <td>3</td>	3
National Arboretum.....(NA)....	479
North Central Region Plant Intro. Station....(NC-7).. <td>20963</td>	20963
Northeast Region Plant Introduction Station..(NE-9).. <td>6442</td>	6442
National Plant Materials Center.....(NPMC).. <td>72</td>	72
National Seed Storage Laboratory.....(NSSL).. <td>58206</td>	58206
Southern Region Plant Introduction Station...(S-9).. <td>52965</td>	52965
Soil Conservation Service.....(SCS)...	8
National Small Grains Collection.....(SGC)...	91418
Soybean Production Research - North.....(SOY-N).. <td>2006</td>	2006
Soybean Production Research - South.....(SOY-S).. <td>2785</td>	2785
Tropical Agriculture Research Station.....(TARS).. <td>1</td>	1
U. S. Vegetable Laboratory.....(USVL).. <td>1</td>	1
Western Region Plant Introduction Station....(W-6)...	27800

=====

TOTAL ACCESSIONS = 270843

At the present time, this data is fully summarized on one page; additional pages will be added as the number of sites increases. Specific information about each site including the curator's name and address may be obtained from another option in the COGS menu. Press 3 to view data classified by genus.

Hit RETURN to continue : 3 <return>

GRIN1-0 CONTENTS BY GENUS		as of 1/14/85
=====		
Unknown**	.....	31
Abelmoschus	.....	518
Abies	.....	7
Abutilon	.....	1
Acacia	.....	17
Acanthopanax	.....	1
Acer	.....	38
Achillea	.....	33
Aconitum	.....	1
Acorus	.....	1
Acroceras	.....	13
Actaea	.....	1
Actinidia	.....	7
Adesmia	.....	4
Adonis	.....	1
Aegilops	.....	656
Aeluropus	.....	27
Aeschynomene	.....	9
Aesculus	.....	3
Aframomum	.....	1

MORE?

If you press the carriage return in response to "MORE?", this option will scroll through the various genera in alphabetical order. There is no way to move quickly to a particular country, the USA, which is near the end of the list, for example. The list must be displayed sequentially by a series of carriage returns until the particular information you want is reached.

If we respond n to "MORE?" we can move quickly to option 4, which is a classification of the total by origin country. Source and origin country in this case may refer to either the country of the plant's true origin or the country from which the plant was acquired.

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In some cases, the country of origin and the country of acquisition are the same and in others they differ. A clearer distinction between these two categories may be found in the accession record of each plant.

MORE? n <return>

Hit RETURN to continue : 4 <return>

=====

GRIN1-0 CONTENTS BY ORIGIN COUNTRY	as of 12/ 5/84
------------------------------------	----------------

=====

Unknown	104183
Afghanistan	2379
Albania	7
Algeria	306
Angola	27
Antigua, British	3
Argentina	1556
Australia	1460
Austria	339
Bangladesh	16
Barbados	2
Belgium	298
Bhutan	142
Bolivia	699
Botswana	38
Brazil	2024
Bulgaria	237
Burma	11
Burundi	13
Cambodia	4

MORE?

Again the information is arranged in alphabetical order and may be viewed by a series of carriage returns. Let us go on, however, to the next option, by first responding n or no to the question MORE? and then entering option 5.

MORE? n <return>

Hit RETURN to continue : 5 <return>

GRIN1-0 CONTENTS BY FAMILY

as of 12/ 5/84

=====		

Unknown**	.....	31
Acanthaceae	.....	2
Aceraceae	.....	38
Actinidiaceae	.....	7
Agavaceae	.....	2
Aizoaceae	.....	4
Altingiaceae	.....	1
Amaranthaceae	.....	1079
Amaryllidaceae	.....	716
Anacardiaceae	.....	45
Annonaceae	.....	8
Apiaceae	.....	672
Apocynaceae	.....	14
Aquifoliaceae	.....	20
Araceae	.....	4
Araliaceae	.....	14
Araucariaceae	.....	1
Arecaceae	.....	1
Asclepiadaceae	.....	18
Asteraceae	.....	4333
MORE? <return>		
Avicenniaceae	.....	1
Balsaminaceae	.....	28
Bombacaceae	.....	1
Boraginaceae	.....	6
Brassicaceae	.....	3336
Bromeliaceae	.....	1

In this case by using the carriage return we scrolled to the second page of family information so that we could display the Brassica family (Brassicaceae) which we use as an example in the Tutorial section of this manual. This data summary shows that at least 3336 records by plant identification numbers are available to a researcher interested in Brassica.

Although the most current number of records is available through DATA, we can quickly determine the approximate size of the Brassica family so that we have a general idea about the amount of information available.

Let us go on to option 6, which displays the total number of each genus classified by their locations at maintenance sites. Again we must first respond n or no to the question "More?" before entering option 6, as follows:

NOTE: Only a part of this page will be displayed.

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 MORE? n <return>
 Hit RETURN to continue : 6 <return>

```
=====
      GENERA BY MAINTENANCE SITE                      as of 12/ 5/84
=====
```

Unknown**	.....	Unknwn	1
Unknown**	.....	GD	1
Unknown**	.....	MIAM	13
Unknown**	.....	NC-7	3
Unknown**	.....	S-9	8
Abelmoschus	.....	NSSL	11
Abelmoschus	.....	S-9	488
Abelmoschus	.....	SGC	1
Abelmoschus	.....	W-6	1
Abies	.....	NA	7
Abutilon	.....	Unknwn	1

. . . {Remainder of page edited out.}

MORE? n <return>
 Hit RETURN to continue : <return>

Here we displayed only part of a page of data, then entered a n and a <return> in response to "MORE?" which yielded "Hit RETURN to continue :".

A second <return> produced the GRIN SUMMARY REPORTS menu and the request to "Enter option, UP (previous menu), or Q (Quit):". We responded UP and were returned to the COGS main menu where we selected option number 2 to explore the NPGS sites, as follows:

 Please enter option number or Q (QUIT) : 2 <return>

```
*****
*                                     *
*                               NPGS Sites                               *
*                                     *
*                               GRIN "Primary Supply Sites"              *
*                                     *
*                               RPIS = Regional Plant Introduction Station *
*****
```

OPTION	SITE	COORDINATOR	SITE NAME
1	PIO	George White	Plant Introduction Office
2	NSGC	David Smith	National Small Grains Collection
3	DBMU	Jimmie Mowder	GRIN DataBase Management Unit
4	W-6	Sam Dietz	Western RPIS
5	NC-7	Ray Clark	North Central RPIS
6	NE-9	Des Dolan	Northeastern RPIS
7	S-9	Gil Lovell	Southern RPIS
8	NSSL	Louis Bass	National Seed Storage Laboratory
9	IR-1	Bob Hanneman	Interregional Potato Introduction Station
10	SOY-N	Dick Bernard	Soybean Collection-North
11	SOY-S	Edgar Hartwig	Soybean Collection-South

Enter option, UP (previous menu) or Q (QUIT) :

This report provides a list of all of the primary supply sites and the appropriate individuals to contact for additional information and from whom to order plant materials.

The left hand column provides another menu of options from which to obtain specific information for contacting each of the curators or managers listed.

The second column lists a code for each site; for example, W-6 (option 4) is the code for the Western Regional Plant Introduction Station (RPIS) in Pullman, Washington. The coordinator for this site is Sam Dietz. If you need seed or other plant material which is available at W-6, you can locate the proper address and telephone number for Sam Dietz through option 4.

References to the particular supply site for any plant identification number may be found in the accession record. In most cases the supply site will be clearly designated in the crop dataset menus.

Notice that not all of the sites listed above are supply sites. NSSL is the National Seed Storage Laboratory in Fort Collins Colorado. NSSL does not distribute seed but serves to guarantee long-term availability. DBMU is the GRIN DataBase Management Unit in Beltsville, Md. and the contact point for information about the GRIN system.

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If, for example, you want to contact the GRIN DataBase Manager, Jimmie Mowder, enter option number 3, as follows:

Enter option, UP (previous menu) or Q (QUIT) : 3 <return>

DBMU Jimmie Mowder GRIN DataBase Management Unit 301-344-3318
USDA/ARS/PGGI
Room 130, Bldg. 001 BARC-West
Route 1
Beltsville,MD 20705

Hit RETURN to continue : UP <return>

Again, enter UP to return to the main COGS menu so that we can explore option 1.

The information provided by option 1, the Characteristic Data Catalogs, is described with applications in the first Case Study in the **TUTORIAL** section of this manual (Page III-2). You may wish to turn to the tutorial now, or you may continue here for a summary of the Characteristic Data Catalogs by pressing 1 and a carriage return.

The first page of the GRIN DATASET SUMMARY, which lists 15 crop datasets, will be displayed on your screen. This summary must be updated periodically and does not necessarily reflect all of the records or Descriptors in the system at any given time.

A more current list, but one having less information about the criteria and the range of each Descriptor category, may be found through the **DATA** option of the GRIN FUNCTIONS menu. See **OPTION DST**, Page V-28.

Notice, this particular summary was catalogued in September 1984. If the summary you display on your screen has been updated, it may contain additional crop datasets.

Please enter option number or Q (QUIT) : 2 <return>
GRIN DATASET SUMMARY as of September, 1984

Option	Site	Dataset Query Name	No. of Records	No. of Descriptors
-----	-----	-----	-----	-----
1	W-6	W6-CHICKPEA	772	10
2	W-6	W6-BEAN	9,152	57
3	W-6	W6-CABBAGE	611	27
4	W-6	W6-VICIA	210	17
5	W-6	W6-GRASS	8,811	37
6	W-6	W6-LENTIL	1,425	26
7	W-6	W6-LETTUCE	597	26
8	W-6	W6-PEA	1,572	12
9	W-6	W6-SAFFLOWER	1,470	21
10	NC-7	NC7-ALFALFA	2,100	61
11	NC-7	NC7-BETA	330	40
12	NC-7	NC7-BRASSICA	845	36
13	NC-7	NC7-CORN	3,075	57
14	NC-7	NC7-CUCUMIS	649	28
15	NC-7	NC7-CUCURBITA	505	23

MORE?

Referring to the crops (1-15) listed above, notice that each listing begins with an option number in the left column under "Option." This number is your access to display more information about the particular crop. The option number is followed by the site designation.

The NPGS maintenance site designation, "Site," is important to know if you need to order seed or plant materials for research. It is also used by GRIN as an integral part of the crop name in obtaining certain kinds of information from the databank. The site designation is followed by the name of the crop or the dataset query.

Notice that the "Dataset Query Name" is preceded by a modified site reference (NC7- in the case of BRASSICA). Since more than one site may maintain collections of the same crops, you must designate which collection you want.

If you go on to the next page of the dataset summary, you will see that Grass, for example, is maintained at both site W-6 (Option 5 above) and at NC-7 (Option 18 on the next page of the summary). Each collection site sets up its own evaluation criteria for the descriptor categories so that W6-GRASS may be described quite differently from NC7-GRASS.

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The crop name is followed by the number of records stored, "No. of Records," one for each of the plant materials entered into the system, and the number of categories that have been evaluated, the "No. of Descriptors" for the particular crop.

After reviewing the first page of the Dataset Summary, you have two choices. A carriage return will display the next page, or if the crop in which you are interested is part of this display, you may now ask GRIN to list its Descriptor categories.

If you prefer to look at the remaining pages of the dataset summary, simply hit a carriage return. Currently (as of 1/85), the system lists 23 crop datasets, displayed on two pages. As the system grows and more pages are added to this list, simply hit additional carriage returns to display successive pages sequentially until you locate the crop you want.

MORE? <return>

GRIN DATASET SUMMARY as of September, 1984

Option	Site	Dataset Query Name	No. of Records	No. of Descriptors
-----	-----	-----	-----	-----
16	NC-7	NC7-DAUCUS	388	42
17	NC-7	NC7-FORAGE-LEG	424	50
18	NC-7	NC7-GRASS	1,685	56
19	NC-7	NC7-HELIANTHUS	730	55
20	NC-7	NC7-LATHYRUS	344	44
21	NC-7	NC7-MELILOTUS	308	46
22	NC-7	NC7-RAPHANUS	526	50
23	NC-7	NC7-TOMATO	4,750	48

Enter option, UP (previous menu) or Q (QUIT) : 12 <return>

Since we have used NC7-BRASSICA as an example elsewhere, we will use it here also. If you are interested in another crop on this page, however, feel free to experiment with other options. If you type 12, the option number for NC7-BRASSICA, as indicated, the following information will be displayed:

Enter option, UP (previous menu) or Q (QUIT) : 12 <return>

NC-7 BRASSICA REPORT MENU

This menu contains data concerning characteristics of Brassica. The data were collected by the North Central Regional Plnt. Intro. Station (NC-7) in Ames, Iowa. For additional information on where, when and how the evaluations were conducted, please contact the curator of the collection.

The descriptors have been arranged into five (5) reports. Each of the descriptors is described below in the report in which it appears.

If you are accessing this data with your own ad-hoc query, the subschema, dataset-query-name and report names are all "NC7-BRASSICA". Sample:

USE SUBSCHEMA NC7-BRASSICA OF SCHEMA GRIN1-0

UNLOCK AREAS...

UNLOCK RECORDS...

SELECT FROM OBSERVATION-RECORD WHERE DATASET-QUERY-NAME = 'NC7-BRASSICA' -
AND [descriptor1] = 'xxx' AND [descriptor2] > 'yyy'

DISPLAY USING NC7-BRASSICAn (where n is the report number described below)

MORE?

GRIN has provided you with the specific name of the collection site where you can order seed or get additional information about the NC7-BRASSICA collection. Recall that the curator's name and address will be available in COGS, Option 2: NPGS Sites.

The arrangement of information available about Descriptors is also provided here. NC7-BRASSICA's 36 descriptors were at the time of this printout arranged in five (5) reports which are displayed as five sequential screens on a video monitor.

Finally, you are provided with a subschema program to use in constructing special "ad-hoc" queries after you become more familiar with the system. For the present, however, we will work primarily with simplified programs for retrieving certain kinds of information. Make a mental note for later use that the subschema program is available for you here.

Now, press the carriage return to display the "NC-7 Brassica Characteristic Data Descriptor List for Report Number 1", as follows:

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MORE? <return>

NC-7 Brassica Characteristic Data Descriptor List for Report Number 1

Descriptor	Definition	Possible values
------------	------------	-----------------

GRW-HAB2	Maximum growth habit (1 - 9 where):	1 = Upright 9 = Prostrate
----------	-------------------------------------	---------------------------

GRW-HAB1	Minimum growth habit (1 - 9 where):	1 = Upright 9 = Prostrate
----------	-------------------------------------	---------------------------

DYS-FLWR	Number of days to flowering:	
----------	------------------------------	--

SDLG-VIG2	Maximum seedling vigor (1 - 9 where):	1 = Good 9 = Poor
-----------	---------------------------------------	-------------------

SDLG-VIG1	Minimum seedling vigor (1 - 9 where):	1 = Good 9 = Poor
-----------	---------------------------------------	-------------------

MORE?

The labels (GRW-HAB2, etc.) which appear under the left hand column labelled "Descriptor" are important. These are codes, a kind of password, for getting additional information later. The next column labelled "Definition" briefly explains the categories.

Finally, the description under "Possible Values" provides a description of the range of values which should be helpful in decisions about how to limit and interpret requests for information.

After viewing this report screen, you have an opportunity to stop if the information you need is here. You may, however, go on to the next screen. Remember that a carriage return or any other response to MORE? moves you to the next screen and so on throughout the five reports. N, n, or no in response to MORE? will produce a new message, as shown below:

MORE? n <return>

Enter the report number, UP (previous), R (start over) or Q (QUIT):

This message allows you to ask for a sample of the data based on any of the report pages. In the COGS program, you have access to only one page of sample data for each report.

Although these pages are chosen at random and not likely to help you identify specific materials, they will give you an opportunity to see how material will be displayed when you begin your own search.

At this point in the program, responding UP (not u or U) allows you to go back to the general list of crop datasets; R allows you to return to the COGS main menu; Q allows you to complete or quit the session and go back to the GRIN FUNCTIONS menu where you may begin the next step of your search. In this case, however, we will display a page of sample data.

Enter the number for the specific report page you want. You have a choice of 5 reports in the case of NC7-BRASSICA. If you respond 1, you will receive the following sample data for the first Report, displayed above:

MORE? n <return>

Enter the report number, UP (previous), R (start over) or Q (QUIT):
1 <return>

NC-7 Brassica Characteristic Data Report 1

ID NUMBER	IDENT	DSCDE	GRW HAB 2	GRW HAB 1	DAYS FLWR	SEEDG VIGOR2	SEEDG VIGOR1
PI 113310	1	13	1	1	0	0	0
PI 120923	1	13	1	1	0	0	0
PI 131249	1	13	1	1	0	0	0
PI 131512	1	13	0	0	0	0	0
PI 164841	1	13	0	0	0	0	0
PI 165595	1	13	1	1	0	0	0
PI 165608	1	13	0	0	0	0	0
PI 166063	1	13	0	0	0	0	0
PI 169057	1	13	0	0	0	0	0
PI 169059	1	13	0	0	0	0	0
PI 169060	1	13	0	0	0	0	0
PI 169061	1	13	0	0	0	0	0
PI 169064	1	13	0	0	0	0	0
PI 169066	1	13	0	0	0	0	0
PI 169067	1	13	0	0	0	0	0
PI 169068	1	13	0	0	0	0	0
PI 169069	1	13	0	0	0	0	0

Enter the report number, UP (previous), R (start over) or Q (QUIT):

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Now you may request additional sample pages of data from any one of the five **NC7-BRASSICA** reports by entering the appropriate number. You may request sample data even if you have not displayed the initial Descriptor List report. You will find copies of Descriptor lists and the sample reports at the end of the first Tutorial Case Study, Pages III-9-12.

By printing copies of both the Descriptor Lists and the sample data for each Report page, a researcher can get a general idea about what kind of information is available on a particular crop and how it can be displayed.

We have now explored the major options currently available in the Catalog of the GRIN System (**COGS**). If we return to the main menu, we see there is a fourth option available: **4 How to use COGS**. This option will provide a summary of the same information available in this **COGS** section of the manual. It also provides information about additions and changes in the system, so you might want to check it from time to time.

SECTION VII

PROCEDURAL SUMMARIES

SUMMARY PROCEDURE I: ENTERING THE GRIN SYSTEM (LOGIN PUBLIC)

For more details about this procedure, see Section II.

Step I: Activate your computer terminal and dial the appropriate GRIN telephone number (Page II-4). Use FULL duplex to start. Provide a data disc and activate your printer if required now.

Step II: GRIN will not greet you until you log in. When you believe a connection has taken place, press the carriage return a few time to clear the system and, without waiting for a message, enter the following:

LOGIN PUBLIC <return>

If you receive no response from GRIN, try again in a few seconds; if still no response, alter your system's duplex setting to HALF and try again. If you fail to get a response this time, turn to Section II (Page II-7) for more information.

Step III: After you receive the introductory messages, you will be asked for your access code. Type in your personal access code (password).

Step IV: If you have been successful, the GRIN FUNCTIONS menu will be displayed. If your commands are not displayed on the screen or if they appear doubled, you may need to alter the duplex setting on GRIN. Type FULL to display commands, or HALF to eliminate double characters. See explanation in Section II (Pages II-9 through 11).

NOTE: Once you have logged into the system, pressing the carriage return does little to get GRIN's attention. Although extra <return>s rarely do harm, you might have to sit through several successive screens of repeated material--once for each unnecessary entry. Further if you see double or triple prompts (> > >) where they do not belong, they are probably the result of extra carriage returns.

SUMMARY PROCEDURE II: PRINTING A REFERENCE LIST OF CROP DESCRIPTORS

For more details about this procedure, see Section III, **TUTORIAL**, Case Study 1.

Step I: Complete the procedures for entering the GRIN system. See preceding summary for more information.

Step II: When the **GRIN FUNCTIONS** menu appears, type **COGS** to display the Catalogue of GRIN services.

Step III: When the **CATALOG OF GRIN SYSTEM (COGS)** appears, type in the number 1 in response to the request for an option number.

Step IV: The first list (1-15) of crop names will appear. Before proceeding further, make sure your printer is activated if you want to print the Descriptor information about a crop.

Step V: When the crop about which you are seeking information is listed, simply type **n** or **no** in answer to the question **MORE ?** and you will be given a message to enter your option number. Select and enter the option number which corresponds to the crop information you want. Do not forget the carriage return.

You must type **n** or **no** (caps are OK); otherwise GRIN assumes that you want the next page of the dataset summary. If the crop is not listed on the first page, simply press the carriage return to display the next page or pages until you find it.

Step VI: After you enter the option number and press the carriage return, the first page of information for your crop will be displayed and printed.

As you are ready to display successive pages of the crop report, simply enter carriage returns in response to **"MORE ?"** You may, however, choose to stop at any time by typing **n** or **no**, and then responding with **QUIT** to return to the **GRIN FUNCTIONS** menu.

After you finish printing all of the pages of the report, you will be given a message which allows you to designate another crop or respond **Q[uit]** and return to the **GRIN FUNCTIONS** menu.

SUMMARY III: SELECTING AND DISPLAYING INFORMATION FROM DATA-EVAL

For more details about this procedure, see Section III, TUTORIAL, Case Studies 2 and 3.

Step I: Complete needed procedures for entering the GRIN system.

Step II: When the GRIN FUNCTIONS menu appears, type DATA to display the GRIN Query Menu Options.

Step III: When the GRIN QUERY MENU OPTIONS appears, type EVAL to display the Site Selections for Crop Evaluation Queries.

Step IV: When the SITE SELECTIONS FOR CROP EVALUATION QUERIES appears, select and enter the option which corresponds to the site location for the crop information wanted, currently the letter S followed by a number.

Step V: When GRIN displays the list of CROP EVALUATION QUERIES for the crops held by the site selected, select and enter the option which corresponds to the crop information wanted, usually a letter or letters followed by a number.

Step VI: GRIN is now prepared to sort through the records of the plants classified in the crop you chose and select those records which meet the conditions you specify. Specify conditions, as follows:

- A. The statement of conditions is based on the names of Descriptor categories as they are listed in COGS. Precede the first entry with AND.
- B. When each condition you specify is required for a record to be selected, join those conditions with AND(s).
- C. When the presence of either one of two or more conditions may bring about selection, join those conditions with OR and enclose them with a parenthesis. For example,
AND CONDITION1 NE 0 AND (CONDITION2=1 OR CONDITION2=2)
- D. Each descriptor condition must be specified separately. For example,
AND CONDITION1 > 0 AND CONDITION1 <3
AND CONDITION2 = 5 AND CONDITION3 NE 0.
- E. Use > for greater than; < for less than; = for equal to; NE for not equal to; >= for greater than or equal to; and <= for less than or equal to.

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- F. Conditions may be combined and "nested" as necessary to select specifically. For example,
 AND (CONDITION 1 OR CONDITION 2 OR CONDITION 3)
 AND (CONDITION 4 OR (CONDITION 5 AND CONDITION 6)).
Remember, each left parenthesis (must be closed with a right parenthesis) to form a set ().
- G. **IMPORTANT:** Notice that AND conditions may not contradict each other. It is impossible to select a record for which
 CONDITION1 = 1 and CONDITION1 = 2 and CONDITION1 = 3.
These conditions contradict each other; that is, CONDITION 1 cannot possibly equal values 1, 2, and 3 at the same time.
- H. Turn to Page III-39 for an example of a multicondition program.
- I. If you wish GRIN to select all records classified within a particular crop, enter carriage returns in response to all requests for conditions. A <return> indicates that no conditions are to be placed on the selection process.

Step VII: GRIN makes three separate requests for you to enter conditions, as follows:

Enter AND and conditions, or <cr>. Maximum 160 characters
>>

continue conditions or <cr>
>>

continue conditions or <cr>
>>

Each opportunity provides 160 character spaces. As long as you do not split words, you may make maximum use of the available space.

It is a good idea to complete a condition before the end of each 160 character line. Your program will be easier to read and to correct. Plan ahead. Distribute the conditions in such a way to make your program easily readable.

NOTE: 160 characters extends beyond the range of most video monitors. Usually the line is "wrapped," which means the second half of the 160 characters will appear on your monitor automatically. A second line with the final 80 characters will be located immediately below the line containing the first 80 characters. You will not have to enter a <return> to go to the second line. You may continue entering conditions as long as you do not exceed the 160 character limit. Find a convenient stopping point before the end of the second line and enter a carriage return to go to the next request for conditions.

Step VII: After you have entered all conditions or <return>s, GRIN will **SELECT** and count the number of records which meet the conditions specified. You may allow this count to proceed to its conclusion, or you may stop it whenever enough information has been selected. Use a **Control-P** to stop the selection process.

NOTE: When you complete the first selection process in each session, the information is placed in Table DATA. If you want to transfer it into INFO you should save Table DATA now (>**SAV**). In subsequent selection processes, you will be asked if you want to overwrite Table DATA. Usually there is no reason to set up new Tables; therefore, respond "yes," unless you have special reasons not to do so. Case Study 5 of TUTORIAL discusses this problem.

Step IX: After the records have been selected, they may be **DISPLAYed** in any of several formats. GRIN automatically provides a reminder for the standard report format. Use the exact form shown below substituting the desired report number for "n."

Enter **DISPLAY USING NC7-BRASSICA**n where n is the report number 1 thru 5
>>**DISPLAY USING NC7-BRASSICA**1 <return>

If you wish to see only selected data, you may enter the desired descriptors names separated by commas, as follows:

>>**DISPLAY ONLY OBS-ACC-ID, HARV-VIG1, HARV-VIG2, SOURCE** <return>

Step X: The display of information may be stopped at any time by using a **Control-P**. When the prompt appears, a new procedure may be started or **QUIT** may be entered to return you to the **GRIN FUNCTIONS** menu.

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SUMMARY PROCEDURE IV: USING THE GRIN EDITOR

For more details about this procedure, see Section III, **TUTORIAL**, Case Study 2.

Step I: Respond to prompt

>ED <return>

GRIN will advise you

--- Edit Mode ---

and provide a colon prompt

:

Step II: Type **n** or **N** until the line which you wish to edit appears, as follows:

:N <return>

1: DISPLAY ONLY OBS-ACC-ID, HARV-VIG1, HARVVIG2, BLM-VIG1,
BLM-VIG2, SEED-PROD1, SEED-PROD2, SOURCE, PLT-TYPE, CULT-REM

Step III: Enter the change command in three steps, as follows:

First, enter C/

Second, enter the incorrect information ended with /:
HARVVIG2/

Finally, enter the correct information ended by another /:
HARV-VIG2/

The general form to be used is C/OLD TEXT/new-text/. The text you want to modify must be entered exactly as it appears, including spaces between letters since they may be modified as well. The above command, as shown, not only changes OLD to new but places a dash "-" between "new" and "text".

Also, be certain the text you enter for correction is sufficient to specify the exact text to be modified.

If, for example, in the line displayed above in STEP II, you had entered the change command as C/HARV/HARV-/, the first harvest vigor entry would be modified to HARV--VIG1. The editor assumes that you want it to make the specified change on the first set of corresponding characters that it finds in the line.

In the command displayed below, since the first harvest vigor category is entered correctly with the hyphen, you would not need to specify 2; however, including it may help clarify the requirement.

```
: C/HARVIG2/HARV-VIG2/      <return>
```

DELETION OF CHARACTERS: If no new material is entered between the two //, the old material is deleted and the line shortened. Be certain to be exact and be careful with commas since they affect some commands:

```
:C/BLM-VIG1,  BLM-VIG2, //      <return>
```

Step IV: After you enter the change and <return>, GRIN displays the revised statements. Note **Bold type** shown below:

```
1: DISPLAY ONLY OBS-ACC-ID, HARV-VIG1, HARVVIG2, BLM-VIG1,  
   BLM-VIG2, SEED-PROD1, SEED-PROD2, SOURCE, PLT-TYPE, CULT-REM
```

```
: C/HARVVIG2/HARV-VIG2/      <return>
```

```
1: DISPLAY ONLY OBS-ACC-ID, HARV-VIG1, HARV-VIG2, BLM-VIG1,  
   BLM-VIG2, SEED-PROD1, SEED-PROD2, SOURCE, PLT-TYPE, CULT-REM
```

```
:C/BLM-VIG1, BLM-VIG2, //
```

```
1:  DISPLAY ONLY OBS-ACC-ID, HARV-VIG1, HARV-VIG2, SEED-PROD1,  
    SEED-PROD2, SOURCE, PLT-TYPE, CULT-REM
```

{Note that the two bloom vigor categories are gone.}

Step V: Check the edited version carefully for errors. If it is now correct, file it.

```
: FILE
```

```
> DISPLAY ONLY OBS-ACC-ID, HARV-VIG1, HARV-VIG2, SEED-PROD1,  
   SEED-PROD2, SOURCE, PLT-TYPE, CULT-REM
```

Step VI: If everything is correct, the command should execute automatically. You might have to enter a final <return>. If you receive another error message, return to the editor.

SUMMARY IV: ALL DATA FOR A PARTICULAR IDENTIFICATION NUMBER

For more details about this procedure, see Section III, TUTORIAL, Case Study IV.

Step I: Select the **DATA** option from the GRIN FUNCTIONS Menu.

Step II: Select the **MISC** option from **DATA**.

Step III: When the **Ad Hoc Selection Assistance Menu** is displayed, enter option **M3**.

Step IV: In order to **SELECT** the information you want, GRIN will ask a series of questions. Answer them, as follows:

>**M3** <return>

Enter subschema name>> [**CROP NAME like NC7-BRASSICA**] <return>

NOTE: Use the official dataset-query-name from COGS or DST.

Enter **ALL** or specific descriptor names separated by commas
>> **ALL** <return>

NOTE: You may specify particular descriptors, but if you want all available informatin, use **ALL**.

Enter GRIN Record-name >> **OBSERVATION-RECORD** <return>

NOTE: Using the observation-record as a "target" record in the **FROM** clause here yields most of the information available about about an accession.

Enter **WHERE** and conditions (max 160 chars) or <cr>
>> **WHERE ACC-PRIMARY-IDENTIFIER EQ 'PI xxxxxx'** <return>

NOTE: Now specify the identification number for the plant you are researching. Leave two spaces between **PI** and the number. This spacing must be preserved exactly. Entering identification numbers is discussed in the **ACC** option of **DATA** (Page V-3).

continue conditions or <cr>
>> <return>

continue conditions or <cr>
>> <return>

NOTE: If you asked to overwrite Table DATA, answer yes. Also, if you receive a message after the record count that the terminal is too small, respond with the following:

>SET TERM WIDTH 132

You will have to reenter your program, but when you reach this point again, the program should run, as follows:

Virtual record count: 1
Total number of virtual records: 1

Step V: Now you may DISPLAY the information you selected in a variety of ways.

- A. The command, >DISPLAY, presents a vertical listing of the following records:

ACCESSION-RECORD; DATASET-RECORD; ENVIRONMENT-RECORD;
OBSERVATION-RECORD; FAMILY-RECORD; GENUS-RECORD;
SPECIES-RECORD; GEOPOLITICAL-ACQUIRE-RECORD; and
GEOPOLITICAL-ORIGIN-RECORD.
- B. The command, >DISPLAY USING ACCESSION, presents a copy of Accession Record. See Page I-5 for an example.
- C. The command, >DISPLAY USING [CROP NAME]n where the Crop name is the formal crop name like NC7-BRASSICA and "n" is the particular report number wanted (See Page III-6). You may display any or all of the crop reports using variations of this command.

NOTE: You might have to set the terminal width if the displays do not fit your screen properly. The following command counteracts the effect of SET TERM WIDTH 132:

>SET TERM WIDTH

See TUTORIAL, Pages III 49 & 52 for more information.

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Step VI: The above commands select and display most of the available information about any identified plant. There are two other select and display commands which might yield important additional information, as follows:

- A: >SELECT AND DISPLAY FROM ACC-SUPPLEMENTAL-RECORD WHERE
ACC-PRIMARY-IDENTIFIER EQ "PI xxxxxx"
- B: >SELECT AND DISPLAY COOPERATOR-RECORD FROM DONOR-LINK-
RECORD WHERE ACC-PRIMARY-IDENTIFIER EQ "PI xxxxxx"

Several other records might also be helpful. See Pages III-55 and . 56 and the **APPENDIX** for additional information about the contents of specific records.

APPENDIX A

COBOL ELEMENTS FOR ALL COBOL SUBSCHEMAS

RECORD FAMILY-RECORD.
FAMILY-NAME PIC X(30).
FAMILY-AUTHORITY PIC X(40).
FAMILY-PIO-CODE PIC X(4).

RECORD FAMILY-SYNONYM-RECORD.
FSYN-NAME PIC X(30).
FSYN-AUTHORITY PIC X(40).
FSYN-DATE-CREATED PIC X(12).

RECORD GENUS-RECORD.
GENUS-NAME PIC X(30).
GENUS-AUTHORITY PIC X(40).
GENUS-PIO-CODE PIC X(4).

RECORD SPECIES-RECORD.
SPECIES-NAME PIC X(30).
SPECIES-AUTHORITY PIC X(40).
SPECIES-PIO-CODE PIC X(4).

RECORD BINOMIAL-SYNONYM-RECORD.
BSYN-GENUS-NAME PIC X(30).
BSYN-SPECIES-NAME PIC X(30).
BSYN-GENUS-AUTHORITY PIC X(40).
BSYN-SPECIES-AUTHORITY PIC X(40).
BSYN-DATE-CREATED PIC X(12).

RECORD GEOPOLITICAL-ACQUIRE-RECORD.
GEOA-COUNTRY PIC X(26).
GEOA-STATE PIC X(20).
GEOA-PIO-CODE PIC X(4).

RECORD GEOPOLITICAL-ORIGIN-RECORD.
GEOO-COUNTRY PIC X(26).
GEOO-STATE PIC X(20).
GEOO-PIO-CODE PIC X(4).

FORTRAN ELEMENTS FOR ALL FORTRAN SUBSCHEMAS

RECORD FMRCDD
INTEGER*2 FMNAME(15) CH*30
INTEGER*2 FMAUTH(20) CH*40
INTEGER*2 FMPCOD(2) CH*4

RECORD FSNRCD
INTEGER*2 FSNNAM(15) CH*30
INTEGER*2 FSNAUT(20) CH*40
INTEGER*2 FSNDRC(6) CH*12

RECORD GNRCD
INTEGER*2 GNNAME(15) CH*30
INTEGER*2 GNAUTH(20) CH*40
INTEGER*2 GNPCOD(2) CH*4

RECORD SPRCD
INTEGER*2 SPNAME(15) CH*30
INTEGER*2 SPAUTH(20) CH*40
INTEGER*2 SPPCOD(2) CH*4

RECORD BSNRCD
INTEGER*2 BSNGNN(15) CH*30
INTEGER*2 BSNSPN(15) CH*30
INTEGER*2 BSNGAU(20) CH*40
INTEGER*2 BSNSAU(20) CH*40
INTEGER*2 BSNDRC(6) CH*12

RECORD GEARCD
INTEGER*2 GEACTY(13) CH*26
INTEGER*2 GEASTA(10) CH*20
INTEGER*2 GEACOD(2) CH*4

RECORD GEORCD
INTEGER*2 GEOCTY(13) CH*26
INTEGER*2 GEOSTA(10) CH*20
INTEGER*2 GEOCOD(2) CH*4

RECORD ACCESSION-RECORD.

ACC-PRIMARY-IDENTIFIER PIC X(10).
ACC-SUBSPECIES PIC X(30).
ACC-VARIETY PIC X(36).
ACC-CULTIVAR PIC X(50).
ACC-COMMON-NAME PIC X(30).
ACC-DATE-RECEIVED PIC X(12).
ACC-DATE-RELEASED PIC X(12).
ACC-ENTRY-LOGONID PIC X(6).
ACC-PRIMARY-SUPPLY-SITE PIC X(6).
ACC-INV-ID PIC X(10).
ACC-DATE-ENTERED PIC X(12).
ACC-DATE-PI-ASSIGNED PIC X(12).
ACC-DATE-TAXON-ASSIGNED PIC X(12).
ACC-ATTRIBUTE-FLAG PIC X(4).
ACC-PIO-APPROVED-FLAG PIC X(3).
ACC-PIO-DONOR-HELD-FLAG PIC X(3).
ACC-PIO-CROP-CATEGORY PIC X(12).
ACC-PIO-LIFE-FORM PIC X(17).
ACC-PIO-FORM-RECEIVED PIC X(16).
ACC-PIO-IMPROVEMENT-STATUS PIC X(20).
ACC-PEDIGREE PIC X(76).

RECORD ACCESSION-GROUP-RECORD.

ACC-GROUP-NAME PIC X(20).
ACC-GROUP-DATA-MGR PIC X(6).
ACC-GROUP-NARR-COUNT COMP.
ACC-GROUP-NARRATIVE 15 TMS PIC X(70).
ACC-GROUP-UPDATE-CLASS PIC X(4).

RECORD ACC-REID-RECORD.

REID-SUBMITTING-COOPERATOR PIC X(30).
REID-NUMBER PIC 9(8) DISP.
REID-SERVICE-LOT PIC 9(8) DISP.
REID-DATE-TAXON-ASSIGNED PIC X(12).
REID-DATE-TAXON-CHANGED PIC X(12).
REID-ORIGINAL-TAXON PIC X(60).

RECORD ACC-SUPPLEMENTAL-RECORD.

ACC-SUPP-LABEL PIC X(10).
ACC-SUPP-LINE PIC X(60).

RECORD DATASET-RECORD.

DATASET-QUERY-NAME PIC X(30).
DATASET-NAME PIC X(70).
DATASET-SITE PIC X(6).
DATASET-CODE PIC 9(5) DISP.
DATASET-ITEM-COUNT PIC 9(5) DISP.
DATASET-OBS-COUNT PIC 9(8) DISP.
DATASET-STORAGE-AREA PIC X(6).
DATASET-NARR-COUNT COMP.
DATASET-NARRATIVE 20 TMS PIC X(70).
DATASET-CAC-FLAG PIC X(3).

RECORD ACRCRD

INTEGER*2 ACID1(5) CH*10
INTEGER*2 ACSSP(15) CH*30
INTEGER*2 ACVAR(18) CH*36
INTEGER*2 ACCULT(25) CH*50
INTEGER*2 ACCNAM(15) CH*30
INTEGER*2 ACDREC(6) CH*12
INTEGER*2 ACDREL(6) CH*12
INTEGER*2 ACLGID(3) CH*6
INTEGER*2 ACSS1(3) CH*6
INTEGER*2 ACIID(5) CH*10
INTEGER*2 ACDENT(6) CH*12
INTEGER*2 ACDPAS(6) CH*12
INTEGER*2 ACDTAX(6) CH*12
INTEGER*2 ACATFL(2) CH*4
INTEGER*2 ACPAFL(2) CH*4
INTEGER*2 ACDHFL(2) CH*4
INTEGER*2 ACPICC(7) CH*14
INTEGER*2 ACLIFM(9) CH*18
INTEGER*2 ACFMRC(8) CH*16
INTEGER*2 ACIMST(10) CH*20
INTEGER*2 ACPED(38) CH*76

RECORD ACGRCD

INTEGER*2 ACGNAM(10) CH*20
INTEGER*2 ACGMGR(3) CH*6
INTEGER*2 ACGCNT
INTEGER*2 ACGNAR(35,15) CH*70
INTEGER*2 ACGUCL(2) CH*4

RECORD ACRRCD

INTEGER*2 ACRSCO(15) CH*30
INTEGER*4 ACRNUM
INTEGER*4 ACRSVL
INTEGER*2 ACRDTA(6) CH*12
INTEGER*2 ACRDTC(6) CH*12
INTEGER*2 ACROTX(30) CH*60

RECORD ACSRCD

INTEGER*2 ACSLAB(5) CH*10
INTEGER*2 ACSLIN(30) CH*60

RECORD DSTRCRD

INTEGER*2 DSTQRY(15) CH*30
INTEGER*2 DSTNAM(35) CH*70
INTEGER*2 DSTSIT(3) CH*6
INTEGER*2 DSTCOD
INTEGER*2 DSTCNT
INTEGER*4 DSTOBS
INTEGER*2 DSTARE(3) CH*6
INTEGER*2 DSTNCT
INTEGER*2 DSTNAR(35,20) CH*70
INTEGER*2 DSTCAC(2) CH*4

RECORD SECONDARY-IDENTIFIER-RECORD.
SECONDARY-ID PIC X(10).

RECORD ID2RCD
INTEGER*2 ID2ID2(5) CH*10

RECORD DESCRIPTOR-RECORD.
DESCRIPTOR-NUMBER PIC 9(5) DISP.
DESCRIPTOR-QUERY-NAME PIC X(30).
DESCRIPTOR-NAME PIC X(70).
DESCRIPTOR-CATEGORY PIC X(12).
DESCRIPTOR-SUBSCH-ITEM-NAME PIC X(6).
DESCRIPTOR-SCHEMA-ITEM-NAME PIC X(14).
DESCRIPTOR-CH-LENGTH PIC 9(5) DISP.
DESCRIPTOR-LOW PIC 9999V99 DISP.
DESCRIPTOR-HIGH PIC 9999V99 DISP.
DESCRIPTOR-CODE-COUNT PIC 9(5) DISP.
DESCRIPTOR-FTN-FORMAT PIC X(8).
DESCRIPTOR-COBOL-FORMAT PIC X(12).
DESCRIPTOR-DEF-COUNT COMP.
DESCRIPTOR-DEFINITION 5 TMS PIC X(70).
DESCRIPTOR-TYPE PIC X(9).
DESCRIPTOR-EDIT-CHECK PIC X(5).

RECORD DESRCD
INTEGER*2 DESNUM
INTEGER*2 DESQRY(15) CH*30
INTEGER*2 DESNAM(35) CH*70
INTEGER*2 DESCAT(6) CH*12
INTEGER*2 DESSUB(3) CH*6
INTEGER*2 DESSCH(7) CH*14
INTEGER*2 DESCHL
REAL*4 DESLOW
REAL*4 DESHI
INTEGER*2 DESCNT
INTEGER*2 DESFMT(4) CH*8
INTEGER*2 DESCMT(6) CH*12
INTEGER*2 DESDCT
INTEGER*2 DESDEF(35,5) CH*70
INTEGER*2 DESTYP(5) CH*10
INTEGER*2 DESEDC(3) CH*6

RECORD CODE-RECORD.
CODE-VALUE PIC X(16).
CODE-DEF-COUNT COMP.
CODE-DEFINITION 3 TMS PIC X(70).

RECORD CDRCD
INTEGER*2 CDVAL(8) CH*16
INTEGER*2 CDDCNT
INTEGER*2 CDDEF(35,3) CH*70

RECORD ENVIRONMENT-RECORD.
ENV-IDENT PIC X(20).
ENV-DATE-PLANTED PIC X(12).
ENV-DATE-HARVESTED PIC X(12).

RECORD EVRCD
INTEGER*2 EVID(10) CH*20
INTEGER*2 EVPLNT(6) CH*12
INTEGER*2 EVHARV(6) CH*12

RECORD OBSERVATION-RECORD.
OBS-ACC-ID PIC X(10).
OBS-IDENT PIC 9(5) DISP.
OBS-DSCODE PIC 9(5) DISP.
OBS-VALUE-001 PIC 9(5) DISP.
OBS-VALUE-002 PIC 9(5) DISP.
OBS-VALUE-003 PIC 9(5) DISP.
OBS-VALUE-004 PIC 9(5) DISP.
OBS-VALUE-005 PIC 9(5) DISP.
OBS-VALUE-006 PIC 9(5) DISP.
OBS-VALUE-007 PIC 9(5) DISP.
OBS-VALUE-008 PIC 9(5) DISP.
OBS-VALUE-009 PIC 9(5) DISP.
OBS-VALUE-010 PIC 9(5) DISP.
OBS-VALUE-011 PIC 9(5) DISP.
OBS-VALUE-012 PIC 9(5) DISP.
OBS-VALUE-013 PIC 9(5) DISP.
OBS-VALUE-014 PIC 9(5) DISP.
OBS-VALUE-015 PIC 9(5) DISP.

RECORD OBRCD
INTEGER*2 OBACID(5) CH*10
INTEGER*2 OBID
INTEGER*2 OBDSCD
INTEGER*2 OBV001
INTEGER*2 OBV002
INTEGER*2 OBV003
INTEGER*2 OBV004
INTEGER*2 OBV005
INTEGER*2 OBV006
INTEGER*2 OBV007
INTEGER*2 OBV008
INTEGER*2 OBV009
INTEGER*2 OBV010
INTEGER*2 OBV011
INTEGER*2 OBV012
INTEGER*2 OBV013
INTEGER*2 OBV014
INTEGER*2 OBV015

OBS-VALUE-016	PIC 9(5)	DISP.	INTEGER*2	OBV016
OBS-VALUE-017	PIC 9(5)	DISP.	INTEGER*2	OBV017
OBS-VALUE-018	PIC 9(5)	DISP.	INTEGER*2	OBV018
OBS-VALUE-019	PIC 9(5)	DISP.	INTEGER*2	OBV019
OBS-VALUE-020	PIC 9(5)	DISP.	INTEGER*2	OBV020
OBS-VALUE-021	PIC 9(5)	DISP.	INTEGER*2	OBV021
OBS-VALUE-022	PIC 9(5)	DISP.	INTEGER*2	OBV022
OBS-VALUE-023	PIC 9(5)	DISP.	INTEGER*2	OBV023
OBS-VALUE-024	PIC 9(5)	DISP.	INTEGER*2	OBV024
OBS-VALUE-025	PIC 9(5)	DISP.	INTEGER*2	OBV025
OBS-VALUE-026	PIC 9(5)	DISP.	INTEGER*2	OBV026
OBS-VALUE-027	PIC 9(5)	DISP.	INTEGER*2	OBV027
OBS-VALUE-028	PIC 9(5)	DISP.	INTEGER*2	OBV028
OBS-VALUE-029	PIC 9(5)	DISP.	INTEGER*2	OBV029
OBS-VALUE-030	PIC 9(5)	DISP.	INTEGER*2	OBV030
OBS-VALUE-031	PIC 9(5)	DISP.	INTEGER*2	OBV031
OBS-VALUE-032	PIC 9(5)	DISP.	INTEGER*2	OBV032
OBS-VALUE-033	PIC 9(5)	DISP.	INTEGER*2	OBV033
OBS-VALUE-034	PIC 9(5)	DISP.	INTEGER*2	OBV034
OBS-VALUE-035	PIC 9(5)	DISP.	INTEGER*2	OBV035
OBS-VALUE-036	PIC 9(5)	DISP.	INTEGER*2	OBV036
OBS-VALUE-037	PIC 9(5)	DISP.	INTEGER*2	OBV037
OBS-VALUE-038	PIC 9(5)	DISP.	INTEGER*2	OBV038
OBS-VALUE-039	PIC 9(5)	DISP.	INTEGER*2	OBV039
OBS-VALUE-040	PIC 9(5)	DISP.	INTEGER*2	OBV040
OBS-VALUE-041	PIC 9(5)	DISP.	INTEGER*2	OBV041
OBS-VALUE-042	PIC 9(5)	DISP.	INTEGER*2	OBV042
OBS-VALUE-043	PIC 9(5)	DISP.	INTEGER*2	OBV043
OBS-VALUE-044	PIC 9(5)	DISP.	INTEGER*2	OBV044
OBS-VALUE-045	PIC 9(5)	DISP.	INTEGER*2	OBV045
OBS-VALUE-046	PIC 9(5)	DISP.	INTEGER*2	OBV046
OBS-VALUE-047	PIC 9(5)	DISP.	INTEGER*2	OBV047
OBS-VALUE-048	PIC 9(5)	DISP.	INTEGER*2	OBV048
OBS-VALUE-049	PIC 9(5)	DISP.	INTEGER*2	OBV049
OBS-VALUE-050	PIC 9(5)	DISP.	INTEGER*2	OBV050
OBS-VALUE-051	PIC 9(5)	DISP.	INTEGER*2	OBV051
OBS-VALUE-052	PIC 9(8)	DISP.	INTEGER*4	OBV052
OBS-VALUE-053	PIC 9(8)	DISP.	INTEGER*4	OBV053
OBS-VALUE-054	PIC 9(8)	DISP.	INTEGER*4	OBV054
OBS-VALUE-055	PIC 9(8)	DISP.	INTEGER*4	OBV055
OBS-VALUE-056	PIC 9(8)	DISP.	INTEGER*4	OBV056
OBS-VALUE-057	PIC 9(8)	DISP.	INTEGER*4	OBV057
OBS-VALUE-058	PIC 9(8)	DISP.	INTEGER*4	OBV058
OBS-VALUE-059	PIC 9999V99	DISP.	REAL*4	OBV059
OBS-VALUE-060	PIC 9999V99	DISP.	REAL*4	OBV060
OBS-VALUE-061	PIC 9999V99	DISP.	REAL*4	OBV061
OBS-VALUE-062	PIC 9999V99	DISP.	REAL*4	OBV062
OBS-VALUE-063	PIC 9999V99	DISP.	REAL*4	OBV063
OBS-VALUE-064	PIC 9999V99	DISP.	REAL*4	OBV064
OBS-VALUE-065	PIC 9999V99	DISP.	REAL*4	OBV065
OBS-VALUE-066	PIC 9999V99	DISP.	REAL*4	OBV066
OBS-VALUE-067	PIC 9999V99	DISP.	REAL*4	OBV067
OBS-VALUE-068	PIC 9999V99	DISP.	REAL*4	OBV068
OBS-VALUE-069	PIC 9999V99	DISP.	REAL*4	OBV069

OBS-VALUE-070 PIC 9999V99 DISP.
 OBS-VALUE-071 PIC X(10).
 OBS-VALUE-072 PIC X(10).
 OBS-VALUE-073 PIC X(10).
 OBS-VALUE-074 PIC X(10).
 OBS-VALUE-075 PIC X(10).
 OBS-VALUE-076 PIC X(10).
 OBS-VALUE-077 PIC X(10).
 OBS-VALUE-078 PIC X(10).
 OBS-VALUE-079 PIC X(10).
 OBS-VALUE-080 PIC X(10).
 OBS-VALUE-081 PIC X(10).
 OBS-VALUE-082 PIC X(10).
 OBS-VALUE-083 PIC X(10).
 OBS-VALUE-084 PIC X(10).
 OBS-VALUE-085 PIC X(10).
 OBS-VALUE-086 PIC X(10).
 OBS-VALUE-087 PIC X(10).
 OBS-VALUE-088 PIC X(10).
 OBS-VALUE-089 PIC X(10).
 OBS-VALUE-090 PIC X(10).
 OBS-VALUE-091 PIC X(10).
 OBS-VALUE-092 PIC X(10).
 OBS-VALUE-093 PIC X(10).
 OBS-VALUE-094 PIC X(10).
 OBS-VALUE-095 PIC X(10).
 OBS-VALUE-096 PIC X(10).
 OBS-VALUE-097 PIC X(10).
 OBS-VALUE-098 PIC X(30).
 OBS-VALUE-099 PIC X(30).
 OBS-VALUE-100 PIC X(30).
 OBS-VALUE-101 PIC X(30).
 OBS-VALUE-102 PIC X(30).
 OBS-VALUE-103 PIC X(30).
 OBS-VALUE-104 PIC X(30).
 OBS-VALUE-105 PIC X(72).
 OBS-VALUE-106 PIC X(72).
 OBS-VALUE-107 PIC X(72).

REAL*4 OBV070
 INTEGER*2 OBV071(5) CH*10
 INTEGER*2 OBV072(5) CH*10
 INTEGER*2 OBV073(5) CH*10
 INTEGER*2 OBV074(5) CH*10
 INTEGER*2 OBV075(5) CH*10
 INTEGER*2 OBV076(5) CH*10
 INTEGER*2 OBV077(5) CH*10
 INTEGER*2 OBV078(5) CH*10
 INTEGER*2 OBV079(5) CH*10
 INTEGER*2 OBV080(5) CH*10
 INTEGER*2 OBV081(5) CH*10
 INTEGER*2 OBV082(5) CH*10
 INTEGER*2 OBV083(5) CH*10
 INTEGER*2 OBV084(5) CH*10
 INTEGER*2 OBV085(5) CH*10
 INTEGER*2 OBV086(5) CH*10
 INTEGER*2 OBV087(5) CH*10
 INTEGER*2 OBV088(5) CH*10
 INTEGER*2 OBV089(5) CH*10
 INTEGER*2 OBV090(5) CH*10
 INTEGER*2 OBV091(5) CH*10
 INTEGER*2 OBV092(5) CH*10
 INTEGER*2 OBV093(5) CH*10
 INTEGER*2 OBV094(5) CH*10
 INTEGER*2 OBV095(5) CH*10
 INTEGER*2 OBV096(5) CH*10
 INTEGER*2 OBV097(5) CH*10
 INTEGER*2 OBV098(15) CH*30
 INTEGER*2 OBV099(15) CH*30
 INTEGER*2 OBV100(15) CH*30
 INTEGER*2 OBV101(15) CH*30
 INTEGER*2 OBV102(15) CH*30
 INTEGER*2 OBV103(15) CH*30
 INTEGER*2 OBV104(15) CH*30
 INTEGER*2 OBV105(36) CH*72
 INTEGER*2 OBV106(36) CH*72
 INTEGER*2 OBV107(36) CH*72

RECORD ENV-NARRATIVE-RECORD.
 ENV-NARR-LABEL PIC X(10).
 ENV-NARRATIVE PIC X(60).

RECORD ENRCD
 INTEGER*2 ENLABL(5) CH*10
 INTEGER*2 ENNARR(30) CH*60

RECORD COOPERATOR-RECORD.
 COOPERATOR-LAST-NAME PIC X(20).
 COOPERATOR-FIRST-NAME PIC X(20).
 COOPERATOR-ORGANIZATION PIC X(30).
 COOPERATOR-ADDRESS-1 PIC X(30).
 COOPERATOR-ADDRESS-2 PIC X(30).
 COOPERATOR-ADDRESS-3 PIC X(30).
 COOPERATOR-CITY PIC X(20).
 COOPERATOR-STATE PIC X(20).

RECORD CORCD
 INTEGER*2 COLNAM(10) CH*20
 INTEGER*2 COFNAM(10) CH*20
 INTEGER*2 COORG(15) CH*30
 INTEGER*2 COADD1(15) CH*30
 INTEGER*2 COADD2(15) CH*30
 INTEGER*2 COADD3(15) CH*30
 INTEGER*2 COCITY(10) CH*20
 INTEGER*2 COSTAT(10) CH*20

COOPERATOR-ZIP PIC X(10).
 COOPERATOR-COUNTRY PIC X(26).
 COOPERATOR-PHONE PIC X(12).
 COOPERATOR-REGION PIC X(6).
 COOPERATOR-ID-NUMBER PIC 9(8) DISP.
 COOPERATOR-UPD-LOGON PIC X(6).
 COOPERATOR-UPD-DATE PIC X(12).
 COOPERATOR-STATUS PIC X(6).
 COOPERATOR-CLASS PIC X(3).

INTEGER*2 COZIP(5) CH*10
 INTEGER*2 COCTRY(13) CH*26
 INTEGER*2 COPHON(6) CH*12
 INTEGER*2 COREGN(3) CH*6
 INTEGER*4 CONUM
 INTEGER*2 COUPDL(3) CH*6
 INTEGER*2 COUPDD(6) CH*12
 INTEGER*2 COSTTS(3) CH*6
 INTEGER*2 COCLAS(2) CH*4

RECORD COOP-GROUP-RECORD.

COOP-GROUP-SITE PIC X(6).
 COOP-GROUP-NAME PIC X(20).
 COOP-GROUP-DATA-MGR PIC X(6).
 COOP-GROUP-ACCESS-CLASS PIC X(4).

RECORD COGRCD

INTEGER*2 COGSIT(3) CH*6
 INTEGER*2 COGNAM(10) CH*20
 INTEGER*2 COGMGR(3) CH*6
 INTEGER*2 COGACL(2) CH*4

RECORD MEMBERSHIP-RECORD.

MEMBER-ROLE PIC X(10).

RECORD MEMRCD

INTEGER*2 MEMROL(5) CH*10

RECORD DONOR-LINK-RECORD.

DONOR-ACC-ID PIC X(35).
 DONOR-NARRATIVE PIC X(70).

RECORD DONRCD

INTEGER*2 DONAID(18) CH*36
 INTEGER*2 DONNAR(10) CH*20

RECORD SUPPLY-SITE-RECORD.

SITE-CODE PIC X(6).
 SITE-NAME PIC X(30).
 SITE-ORGANIZATION PIC X(30).
 SITE-ADDRESS-1 PIC X(30).
 SITE-ADDRESS-2 PIC X(30).
 SITE-ADDRESS-3 PIC X(30).
 SITE-CITY PIC X(20).
 SITE-STATE PIC X(20).
 SITE-ZIP PIC X(10).
 SITE-COUNTRY PIC X(26).
 SITE-PHONE PIC X(12).
 SITE-REGION PIC X(6).
 SITE-CURATOR-FIRST-NAME PIC X(20).
 SITE-CURATOR-LAST-NAME PIC X(20).
 SITE-LAST-ORDER PIC 9(5) DISP.

RECORD SSRCD

INTEGER*2 SSSCODE(3) CH*6
 INTEGER*2 SSNAME(15) CH*30
 INTEGER*2 SSORG(15) CH*30
 INTEGER*2 SSADD1(15) CH*30
 INTEGER*2 SSADD2(15) CH*30
 INTEGER*2 SSADD3(15) CH*30
 INTEGER*2 SSCITY(10) CH*20
 INTEGER*2 SSSTAT(10) CH*20
 INTEGER*2 SSZIP(5) CH*10
 INTEGER*2 SSCTRY(13) CH*26
 INTEGER*2 SSPHON(6) CH*12
 INTEGER*2 SSREGN(3) CH*6
 INTEGER*2 SSCURF(10) CH*20
 INTEGER*2 SSCURL(10) CH*20
 INTEGER*2 SSLORD

RECORD GENERIC-ORDER-RECORD.

ORDER-SITE-ID PIC X(6).
 ORDER-NUMBER PIC 9(5) DISP.
 ORDER-TYPE PIC X(2).
 ORDER-DATE-REQUIRED PIC X(12).
 ORDER-LAST-NAME PIC X(20).
 ORDER-FIRST-NAME PIC X(20).
 ORDER-ORGANIZATION PIC X(30).
 ORDER-ADDRESS-1 PIC X(30).

RECORD GORCD

INTEGER*2 GOSITE(3) CH*6
 INTEGER*2 GONUM
 INTEGER*2 GOTYPE(1) CH*2
 INTEGER*2 GODREQ(6) CH*12
 INTEGER*2 GOLNAM(10) CH*20
 INTEGER*2 GOFNAM(10) CH*20
 INTEGER*2 GOORG(15) CH*30
 INTEGER*2 GOADD1(15) CH*30

ORDER-ADDRESS-2 PIC X(30).
 ORDER-ADDRESS-3 PIC X(30).
 ORDER-CITY PIC X(20).
 ORDER-STATE PIC X(20).
 ORDER-ZIP PIC X(10).
 ORDER-COUNTRY PIC X(26).
 ORDER-REQUESTOR-REFERENCE PIC X(10).
 ORDER-CURATOR-CMMT PIC X(60).
 ORDER-ACCESSION-COUNT PIC 9(5) DISP.
 ORDER-ACCESSION-SHIPED PIC 9(5) DISP.
 ORDER-ACCESSION-SPLIT PIC 9(5) DISP.
 ORDER-FILE-NAME PIC X(30).
 ORDER-SPECIAL-INSTRUCTIONS 5 TMS PIC X(76).
 ORDER-DATE-ENTERED PIC X(12).
 ORDER-DATE-SHIPED PIC X(12).
 ORDER-STATUS PIC X(6).
 ORDER-FILE-LOCK PIC X(3).

INTEGER*2 GOADD2(15) CH*30
 INTEGER*2 GOADD3(15) CH*30
 INTEGER*2 GOCITY(10) CH*20
 INTEGER*2 GOSTAT(10) CH*20
 INTEGER*2 GOZIP(5) CH*10
 INTEGER*2 GOCTRY(13) CH*26
 INTEGER*2 GORREF(5) CH*10
 INTEGER*2 GOCCMT(30) CH*60
 INTEGER*2 GOACNT
 INTEGER*2 GOASHP
 INTEGER*2 GOASPL
 INTEGER*2 GOFILE(15) CH*30
 INTEGER*2 GOSPEC(38,6) CH*76
 INTEGER*2 GODENT(6) CH*12
 INTEGER*2 GODSHP(6) CH*12
 INTEGER*2 GOSTTS(3) CH*6
 INTEGER*2 GOFLCK(2) CH*4

RECORD SITE-CROP-RECORD.

CROP-SITE PIC X(6).
 CROP-ID PIC X(20).
 CROP-HUNDRED-SEED-WT PIC 9999V99 DISP.
 CROP-CONVERT-QTY PIC 9999V99 DISP.
 CROP-CRITICAL-REPLENISHMENT PIC 9999V99 DISP.
 CROP-CRITICAL-DISTRIBUTION PIC 9999V99 DISP.
 CROP-CRITICAL-RETEST-INTERVAL PIC 9(5) DISP.
 CROP-CRITICAL-GERMINATION PIC 9(5) DISP.
 CROP-MEASUREMENT-UNIT PIC X(2).
 CROP-SHIP-QTY PIC 9999V99 DISP.
 CROP-MAINT-TECHNIQUE PIC X(4).

RECORD SCRCR

INTEGER*2 SCSITE(3) CH*6
 INTEGER*2 SCCROP(10) CH*20
 REAL*4 SCCWT
 REAL*4 SCCQTY
 REAL*4 SCREPL
 REAL*4 SCDIST
 INTEGER*2 SCTEST
 INTEGER*2 SCGERM
 INTEGER*2 SCMEAS(1) CH*2
 REAL*4 SCSQTY
 INTEGER*2 SCMTTC(2) CH*4

RECORD INVENTORY-RECORD.

INV-SITE PIC X(6).
 INV-ACC-ID PIC X(10).
 INV-ID PIC X(10).
 INV-DATE-RECEIVED PIC X(12).
 INV-DATE-RELEASED PIC X(12).
 INV-AVAIL-CMMT PIC X(10).
 INV-QTY-ON-HAND PIC 9999V99 DISP.
 INV-QTY-AVAILABLE PIC 9999V99 DISP.
 INV-DATE-PLANTED PIC X(12).
 INV-DATE-HARVESTED PIC X(12).
 INV-LOCATION PIC X(10).
 INV-POLLINATION-CODE PIC X(4).
 INV-PARENT PIC X(10).
 INV-COMMENT PIC X(60).
 INV-MAINT-COUNT PIC 9(5) DISP.
 INV-HUNDRED-SEED-WT PIC 9999V99 DISP.
 INV-CONVERT-QTY PIC 9999V99 DISP.
 INV-CRITICAL-REPLENISHMENT PIC 9999V99 DISP.
 INV-CRITICAL-DISTRIBUTION PIC 9999V99 DISP.
 INV-CRITICAL-RETEST-INTERVAL PIC 9(5) DISP.

RECORD IVRCR

INTEGER*2 IVSITE(3) CH*6
 INTEGER*2 IVACID(5) CH*10
 INTEGER*2 IVID(5) CH*10
 INTEGER*2 IVDREC(6) CH*12
 INTEGER*2 IVDREL(6) CH*12
 INTEGER*2 IVACMT(5) CH*10
 REAL*4 IVQOH
 REAL*4 IVQAVL
 INTEGER*2 IVPLNT(6) CH*12
 INTEGER*2 IVHARV(6) CH*12
 INTEGER*2 IVLOC(5) CH*10
 INTEGER*2 IVPOLL(2) CH*4
 INTEGER*2 IVPRNT(5) CH*10
 INTEGER*2 IVCMMT(30) CH*60
 INTEGER*2 IVMCNT
 REAL*4 IVCWT
 REAL*4 IVCQTY
 REAL*4 IVREPL
 REAL*4 IVDIST
 INTEGER*2 IVTEST

INV-CRITICAL-GERMINATION PIC 9(5) DISP.
 INV-MEASUREMENT-UNIT PIC X(2).
 INV-SHIP-QTY PIC 9999V99 DISP.
 INV-GERM-NUMBER COMP.
 INV-GERMINATION 4 TMS .
 3 INV-PCT-NORMAL-SEEDLING PIC 9(5) DISP.
 3 INV-PCT-HARD-SEED PIC 9(5) DISP.
 3 INV-PCT-GERMINATION PIC 9(5) DISP.
 3 INV-GERMINATION-YEAR PIC 9(5) DISP.
 INV-DATE-ENTERED PIC X(12).
 INV-MAINT-TECHNIQUE PIC X(4).
 INV-AVAIL-FLAG PIC X(8).

INTEGER*2 IVGERM
 INTEGER*2 IVMEAS(1) CH*2
 REAL*4 IVSQTY
 INTEGER*2 IVGNUM

 INTEGER*2 IVPNRM(4)
 INTEGER*2 IVPHRD(4)
 INTEGER*2 IVPGRM(4)
 INTEGER*2 IVGYR(4)
 INTEGER*2 IVDENT(6) CH*12
 INTEGER*2 IVMTTC(2) CH*4
 INTEGER*2 IVAFLG(4) CH*8

RECORD INV-GROUP-RECORD.
 INV-GROUP-SITE PIC X(6).
 INV-GROUP-NAME PIC X(20).
 INV-GROUP-DATA-MGR PIC X(6).

RECORD IVGRCD
 INTEGER*2 IVGSIT(3) CH*6
 INTEGER*2 IVGNAM(10) CH*20
 INTEGER*2 IVGMGR(3) CH*6

RECORD INV-GROUP-LINK-RECORD.
 INV-GROUP-LINK-NARRATIVE PIC X(20).

RECORD IGLRCD
 INTEGER*2 IGLNAR(10) CH*20

RECORD SUPPLIER-LINK-RECORD.
 SUPP-LINK-NARRATIVE PIC X(20).

RECORD SLKRCD
 INTEGER*2 SLKNAR(10) CH*20

APPENDIX B

The following is a list of AREAS within the GRIN database, and the RECORD types contained within each AREA. This list can be used to help you UNLOCK and SELECT only the AREAS and RECORDS needed within your queries. By being careful to UNLOCK only those AREAS actually needed you reduce overhead and speed up response time significantly. Note - FORTRAN names in parenthesis, refer to Appendix A for FORTRAN RECORD and data element names.

STANDARDS-AREA (ARDST)

FAMILY-RECORD
FAMILY-SYNONYM-RECORD
GENUS-RECORD
SPECIES-RECORD
BINOMIAL-SYNONYM-RECORD
GEOPOLITICAL-ACQUIRE-RECORD
GEOPOLITICAL-ORIGIN-RECORD

ACCESSION-AREA (ARACC)

ACCESSION-RECORD
ACCESSION-SUPPLEMENTAL-RECORD
ACCESSION-REIDENTIFICATION-RECORD
ACCESSION-GROUP-RECORD
SECONDARY-IDENTIFIER-RECORD

COOPERATOR-AREA (ARCOOP)

COOPERATOR-GROUP-RECORD
COOPERATOR-RECORD
MEMBERSHIP-RECORD
DONOR-LINK-RECORD
SUPPLY-SITE-RECORD

SITE-AREA (SITEAR)

(ALSO KNOWN AS PIO-AREA, NSSL-AREA, ETC.)

GENERIC-ORDER-RECORD
SITE-CROP-RECORD
INVENTORY-RECORD
SUPPLIER-LINK-RECORD
INVENTORY-GROUP-RECORD
INVENTORY-GROUP-LINK-RECORD

DICTIONARY-AREA (ARDICT)

DATASET-RECORD
DESCRIPTOR-RECORD
CODE-RECORD

EVALUATION-AREA (AREV1)

ENVIRONMENT-RECORD
ENVIRONMENT-NARRATIVE-RECORD
OBSERVATION-RECORD

APPENDIX C - Glossary of Terms

The following are definitions of terms discussed in this document

ACCESS CODE

The ACCESS CODE is a password assigned to you the PUBLIC user by the GRIN DBMU when you requested access to GRIN. This access code identifies you as a valid GRIN user and helps the DBMU to keep track of system use.

AREAS

AREAS are sub-sections of the GRIN database. Area names are assigned according to a general interpretation of the record types which reside within that area. For instance, the ACCESSION-AREA contains those records which are generally recognized as dealing particularly with accession data. The STANDARDS-AREA contains record types which define GRIN standards for such things as Taxonomic nomenclature and geographic country names, etc. See Appendix C for a complete list of area names and the record types contained within them.

BACKSPACE

BACKSPACE is the ability to backup one space when you have incorrectly entered something on your terminal. For instance, if you entered DATT to the GRIN main menu prompt of FUNCTION CODE, and wish to correct the entry you would BACKSPACE one character and enter an A where the T was placed incorrectly, changing your response to DATA, which is a valid option. This will not work if you have already hit the carriage return key. Backspace is used to correct entries BEFORE hitting carriage return. For PUBLIC users the GRIN system interprets an octal value of 210 as a backspace.

BASE

BASE RECORDS are the "lowest" level record type in a particular DBMS/QUERY execution. For instance, you submit a query which says SELECT [...] FROM ACCESSION-RECORD WHERE [.condition.]. In this example, ACCESSION-RECORD is the base record for this particular query. You cannot ask for data elements contained in records which are "below" the base record in the GRIN data model, or from records which are equally "low" in the data model, but on a different downward path from the "top" of the model. Downward paths can be traced by following the arrows on the data model from "high" level record types to "lower" level record types. See also TARGET, VIRTUAL RECORD.

BREAK

BREAK signals the PRIME to "interrupt" the currently executing command or process, and return the user to the previous prompt. The break key is particularly useful within the DBMS/QUERY process to terminate an ongoing procedure or report. We have disabled the break during certain operations however. For PUBLIC users the break function is assigned an octal value of 220. See also CONTROL-P.

C 30152

C 30152 is the PRIME's TELENET network address. In other words, when you have established communication with TELENET, and wish to indicate to TELENET that you want to "talk" to the PRIME 750 in Beltsville, as opposed to some other computer, you enter C 30152.

CARRIAGE RETURN

CARRIAGE RETURN is indicated by <return> in our document. Different terminals may have another name for the key, and the function. Carriage return means send and is used to send your typed input to the computer. Your terminal may say RETURN or ENTER or LINE FEED for the appropriate key. The octal value for carriage return is 215. See also RETURN, ENTER or LINE FEED.

CHD

CHD is one of the GRIN SUBSCHEMAS. It is written in Fortran, and can be used when the user wishes to query data from the observation records within GRIN. It is limited to those record types directly involved with characteristic data and its supporting record types. See also SUBSCHEMAS, FORTRAN.

COBOL

COBOL is an acronym for Common Business Oriented Language, and is considered one of data processings "higher level" languages. It has some advantages for business applications, but is considered too cumbersome for some scientific applications which have lots of numeric calculations to perform.

COGS

COGS is, in effect, an abbreviation. When you enter COGS at your terminal you initiate a program which gives you access to some catalogs of germplasm reports and information about GRIN and the NPGS sites within GRIN.

CONTROL

The CONTROL key is used in conjunction with some alphabetic or punctuation keys to change their meaning. Using the control key creates a "control character" which may have a special meaning to the computer. The control key may be labeled CTRL on your terminal, or it may be missing altogether. See also CONTROL-P, CONTROL-Q, CONTROL-S, CTRL.

CONTROL-P

CONTROL-P is a "control character" which is interpreted by the PR1ME as an octal 220 break instruction. Its effect is to "interrupt" the ongoing command or process and return control to a higher level prompt. This control character is sent by holding down the control key and typing P. See also BREAK.

CONTROL-Q

CONTROL-Q is a "control character" which is interpreted by the PR1ME as an octal 221 resume instruction. Control-q is used following a control-s to resume displaying information to the computer terminal which had been previously halted. This is particularly helpful where your terminal is of the Video Display Terminal (VDT) variety, rather than the line printing variety which prints your session on paper.

CONTROL-S

CONTROL-S is a "control character" which is interpreted by the PRIME as an octal 223 halt instruction. It temporarily halts output to your terminal so that you can view it before it "scrolls" upward and out of sight off the top of the VDT. The display can be continued by entering a control-q when you are ready. This command is not necessary if your terminal is of the line printer variety and all output is printed on paper.

CRT

CRT is an acronym for Cathode Ray Tube, and means the same thing as VDT (Video Display Terminal). Both indicate a terminal type which has a TV-like tube for data display rather than printing all output to paper during your session.

CTRL

CTRL is another designation for CONTROL key. Your terminal may have either or it may have neither, depending on type. See also CONTROL.

CURRENT

Currency is a DBMS concept which means the "current" area or set or record depending upon what you are doing at the time. For instance, if you are using DATA, the DBMS/QUERY package, and you have said USE SUBSCHEMA FMAST OF SCHEMA GRIN1-0, and you have submitted a query, like SE ALL FROM CODE-RECORD. During this example the PRIME's "currency" indicators would say that your "current" schema is GRIN1-0, the "current" subschema is FMAST, the "current" area is the DICTIONARY-AREA and the "current" record is the last record in the CODE-RECORD file that satisfied your selection criteria. If you choose to change subschemas at this point you only need to enter USE SUBSCHEMA NEW-SUBSCHEMA since the system remembers that your "current" schema is GRIN1-0.

DATA

We have attempted to automate as much of the PUBLIC procedures as we can. Keeping this in mind, we have assigned names to files that you may generate during your session. We automatically assign the name DATA to any query file that you SAVE. That way when you then enter VIF or VIC to convert your data file to INFO format, the system looks for a file called DATA rather than asking you for the filename. If you have saved several files during the session, the system will ask you to enter the filenames you assigned these additional files.

DBMS/QUERY

DBMS/QUERY is the name of a "kind" of software package offered by PRIME. In this case it designates a DataBase Management System Query package. It refers to those processes and features contained within PRIME's DISCOVER or VISTA software. For PUBLIC users it is synonymous with DATA. See also DISCOVER, VISTA, QUERY.

DBMU

The DataBase Management Unit (DBMU) is a staff of computer professionals and plant scientists located at the Beltsville Agricultural Research Center, within the Plant Genetics and Germplasm Institute. The DBMU is responsible for maintaining the GRIN system, keeping the database up and

running, making modifications to GRIN software as necessary and providing assistance when requested. The DBMU can be contacted as follows:

Mr. Jimmie D. Mowder - Database Manager
USDA/ARS/PGGI/GRIN/DBMU
Room 130, Building 001 BARC-West
Beltsville, Maryland 20705

FTS or (301) 344-3318 and 344-2646

DESCRIBE

DESCRIBE is one of the status commands within PRIME's DBMS/QUERY package. You can use describe to display various components of the GRIN database, record and "virtual" record structures. See also DESCRIBE RECORD, DESCRIBE STRUCTURE, DESCRIBE VIRTUAL RECORD.

DESCRIBE RECORD

You have entered the DBMS/QUERY package and are interested in finding out about various record formats or data elements contained in a record, the DESCRIBE RECORD command is useful. If you have already established currency in a particular schema and subschema, then DESCRIBE RECORD ENV-NARRATIVE-RECORD will display the format of the record requested as follows:

```
1 RECORD ENV-NARRATIVE-RECORD.  
  2 ENV-NARR-LABEL PICTURE X(10).  
  2 ENV-NARRATIVE PICTURE X(60).
```

The PICTURE clauses are COBOL format clauses which indicate what size the data elements are. The "X" indicates the data can be either alphabetic or numeric (alphanumeric) and the number in parenthesis is the number of "characters" or "bytes" the element is allowed to occupy. The word "DATA" would have a picture of X(4), representing the 4 characters in the word. If you have not yet specified a schema or subschema then the format will be DESCRIBE RECORD [record-name] OF SUBSCHEMA [subschema-name] OF SCHEMA [schema-name]. See also DESCRIBE.

DESCRIBE STRUCTURE

The DESCRIBE STRUCTURE command is used when you wish to see what virtual record is involved with a particular "target" or "base" record. If you are already "current" in a schema and subschema and say DESCRIBE STRUCTURE ENV-NARRATIVE-RECORD, DBMS/QUERY will display the following:

```
VIRTUAL RECORD NAME IS ENV-NARRATIVE-RECORD;  
BASED ON RECORD ENV-NARRATIVE-RECORD;  
ENVIRONMENT-RECORD OWNS ENV-NARRATIVE-RECORD VIA SET ENVIRONMENT-OWNED-SET.
```

The virtual record name is shown, as is the base record. The base record will be the object or "target" of the DESCRIBE STRUCTURE command itself. You may use the GRIN data model to locate the records named in this example and notice that they are "connected" with an arrow. The arrow represents a "SET", or relationship between the two records. See also DESCRIBE, VIRTUAL RECORD, DESCRIBE VIRTUAL RECORD.

DESCRIBE VIRTUAL RECORD

The DESCRIBE VIRTUAL RECORD command is used to display the data elements contained in the virtual record which is the object or target of the command itself. If you are already "current" with schema and subschema and enter DESCRIBE VIRTUAL RECORD ENV-NARRATIVE-RECORD the DBMS/QUERY returns the following:

```
1 VIRTUAL RECORD ENV-NARRATIVE-RECORD.
  2 ENV-NARR-LABEL PICTURE X(10).
  2 ENV-NARRATIVE PICTURE X(60).
  2 ENV-IDENT PICTURE X(20).
  2 ENV-DATE-PLANTED PICTURE X(12).
  2 ENV-DATE-HARVESTED PICTURE X(12).
```

You will see that all the data elements in the entire virtual record are placed within a single record description. This single record description carries the name of the base or target record. In our example above, only ENV-NARR-LABEL and ENV-NARRATIVE are actually contained in the target record ENV-NARRATIVE-RECORD, and ENV-IDENT, ENV-DATE-PLANTED and ENV-DATE-HARVESTED are data elements in the target record's "owner" record, which is the ENVIRONMENT-RECORD. The PICTURE clauses are COBOL format clauses which indicate what size the data elements are. The "X" indicates the data can be either alphabetic or numeric (alphanumeric) and the number in parenthesis is the number of "characters" or "bytes" the element is allowed to occupy. The word "DATA" would have a picture of X(4), representing the 4 characters in the word. See also DESCRIBE, VIRTUAL RECORD.

DF

DF is the designation for a DATA FILE within INFO's DIR command. It is in the left-most column in the example below:

ENTER COMMAND >DIR

TYPE	NAME	INTERNAL NAME	NO. RECS	LENGTH	EXTERNAL
DF	DATA	PUL000INF	23	1526	
PG	DATA.LOAD	PUL001INF	142	200	

See also PG, SF, IF, RP

DIR

DIR is the command to list the contents of your INFO directory. It is used as follows:

ENTER COMMAND >DIR

TYPE	NAME	INTERNAL NAME	NO. RECS	LENGTH	EXTERNAL
DF	DATA	PUL000INF	23	1526	
PG	DATA.LOAD	PUL001INF	142	200	

See also DIRECTORY.

DIRECTORY

Each INFO user establishes a DIRECTORY when he/she enters the procedure and gives a USER NAME. The directory contains all the data files, programs, special forms, input forms and reports generated by that user during their session. To list the contents of your directory enter DIR. See also DIR.

DISCOVER

DISCOVER is the name of PRIME's DBMS/QUERY processor. It can also be called VISTA which is the PRIMOS command which executes the procedure. For PUBLIC users the DBMS/QUERY processor is executed via the abbreviation DATA. See also DBMS/QUERY, VISTA.

DISPLAY

DISPLAY appears throughout the GRIN procedures. It is a command within both the DBMS/QUERY processor and INFO. Within DBMS/QUERY (DATA) a query may say SELECT AND DISPLAY [...] FROM [...] WHERE [...] and as each qualifying record is selected it will be displayed at the terminal. Following a query DISPLAY may be used to look at the results of the query, as in: DISPLAY ONLY [data-element1, data-element2, data-element3, ...], or as DISPLAY, where all data elements will be displayed. Within INFO, DISPLAY is used to view data elements also. Its format is as above: DISPLAY [data-element1, data-element2, data-element3, ...] without the ONLY qualifier.

ENTER

ENTER is another of several possible designations for the carriage return key on some terminals. Regardless of designation, PRIME accepts an octal 215 for sending user input to the computer. We will occasionally say enter this or enter that when instructing you to type in a particular word, command or response to a system prompt. See also CARRIAGE RETURN, RETURN, LINE FEED.

ENTER COMMAND >

When you are working within INFO, the PRIME's data management utility, ENTER COMMAND > is the programs way of telling the user that it is waiting to accept instruction on what to do next.

EXIT

EXIT is an option on the GRIN main menu. When you have finished with your session and are ready to log off the computer enter EXIT and you will be logged off. After entering EXIT you may terminate the telecommunication link. We request that you do not just turn off your terminal to exit from the system.

FAC

FAC is one of the GRIN SUBSCHEMAS. It is written in Fortran, and can be used when the user wishes to query data from the accession records within GRIN. It is limited to those record types directly involved with accession passport data and supporting record types. See also SUBSCHEMAS, FORTRAN.

FIV

FIV is one of the GRIN SUBSCHEMAS. It is written in Fortran, and can be used when the user wishes to query data from the inventory records within GRIN. It is limited to those record types directly involved with inventory data and supporting record types. See also SUBSCHEMAS, FORTRAN.

FMAST

FMAST is one of the GRIN SUBSCHEMAS. It is written in Fortran, and can be used when the user wishes to query data from all record types within GRIN. It is one of our master subschemas which include all records. By this we

mean it is not restricted to a subset of record types, but can be used to access ANY record type. See also SUBSCHEMAS, FORTRAN.

FORTRAN

FORTRAN is one of data processing "higher level" languages and is used extensively in scientific applications which involve a great deal of repetitive calculations or "number crunching" where extreme accuracy is a requirement.

FTS

FTS stands for Federal Telecommunications System and represents the telephone network used by federal offices to talk to one another.

FULL/HALF

Full and half are duplex settings. In a literal sense half duplex lines permit transmission of a character of data in only one direction at a time, either TO the computer, or FROM the computer to the terminal. Full duplex, on the other hand supports simultaneous, bi-directional transmission of data. All PRIME ports operate in full duplex ALL the time, however you have the option of specifying full duplex if you want the processor to "echo" characters to the terminal, and half if you do not want the processor to echo. Duplex is a more complex consideration when dealing with TELENET since there are three duplex settings to be considered, your terminal's, TELENET's and the PRIME's. You should find a satisfactory combination of settings through trial and error. The FULL and HALF options in the GRIN main menu can be used to alter the PRIME's setting for the port you are using during your session.

GRIN

GRIN is an acronym for Germplasm Resources Information Network.

GRIN1-0

GRIN1-0 is one of several databases on the PRIME. We maintain three databases within the GRIN system. They are GRIN1-0, GRIN1-D and GRIN1-X. GRIN1-0 is our current "production" database. It contains live, active data and is the database or "schema" you will use during your session in GRIN. GRIN1-D is our "demonstration" database. It is considerably smaller than GRIN1-0, but has all the same features. It is used to demonstrate newly developed system features and allow our users a non-critical database in which to test features prior to working on actual data. GRIN1-X is our "development" database. We use GRIN1-X to develop new system features. It, like GRIN1-D is smaller than GRIN1-0, but may not resemble GRIN1-0 at all depending upon what kind of development is ongoing at any one time. It is the least stable of the GRIN databases and not available to the PUBLIC. See also SCHEMAS.

HELP

HELP is available in a number of places within the GRIN system. The help option in the GRIN main menu displays a general help frame about the various menu options. There is a help command with the DBMS/QUERY (DATA) option and the INFO option as well. Help can also be obtained from the DBMU.

IF

IF is the designation for an INPUT FORM within INFO's DIR command. It is in the left-most column in the example below:

ENTER COMMAND >DIR

TYPE NAME	INTERNAL NAME	NO. RECS	LENGTH	EXTERNAL
DF NAMES	PUL000INF	23	1526	
IF NEW.USERS	PUL001INF	142	200	

See also DF, PG, RP, SF.

INFO

INFO is, essentially, an abbreviation used to execute INFO8S, the PRIME's relational data management utility. Using INFO a user can set up a filing system, store information in this filing system, retrieve information from the files, perform arithmetic operations on elements of selected files, design reports and special forms using information from specified files and "relate" a number of data files to one another on a common element. INFO is a registered trademark of HENCO Software, Inc. 100 Fifth Avenue, Waltham, Massachusetts 02154. See also INFO8S.

INFO8S

INFO8S represents a version, or revision (Rev) of INFO, the relational data management utility available to you on the PRIME.

ITEMS

Once you have SELECTED a data file within INFO, and wish to see what data elements are contained therein, enter ITEMS and the format of the file will be displayed at your terminal, as follows:

ENTER COMMAND >SELECT TAX
1 RECORD(S) SELECTED

ENTER COMMAND >ITEMS

DATAFILE NAME: TAX

4/26/1984

9 ITEMS: STARTING IN POSITION 1									
COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	PROT	KEY	OCCURS	INDEX
1	FMNAME	30	30	C	-	4	-	-	-
31	FMAUTH	40	40	C	-	4	-	-	-
71	FMPCOD	4	4	C	-	4	-	-	-
75	GNNAME	30	30	C	-	4	-	-	-
105	GNAUTH	40	40	C	-	4	-	-	-
145	GNPCOD	4	4	C	-	4	-	-	-
149	SPNAME	30	30	C	-	4	-	-	-
179	SPAUTH	40	40	C	-	4	-	-	-
219	SPPCOD	4	4	C	-	4	-	-	-

COLUMN indicates starting column number and WIDTH indicates the size of the data element. OUTPUT indicates the size of the data element when it appears in reports or is displayed on the terminal.

KILL

The KILL character causes all information you have entered to be ignored. It must be used before hitting the carriage return or enter key. After hitting your KILL character you may re-enter your input starting wherever the cursor happens to be. This new entry will be acted upon without regard to what you typed before. The PRIME accepts an octal value of 377 as the kill character.

LINE FEED

LINE FEED is another of several possible designations for the carriage return key on some terminals. Regardless of designation, PRIME accepts an octal 215 for sending user input to the computer. See also CARRIAGE RETURN, RETURN, ENTER.

LIST

LIST is an INFO command. Once you have SELECTED a data file and wish to see all the data elements within the file you enter LIST. This command is different than the DISPLAY command which allows you to specify certain data elements to be displayed rather than the entire record. LIST is also a DBMS/QUERY command when used in conjunction with RECORDS, SCHEMAS or SUBSCHEMAS, as in LIST RECORDS OF SUBSCHEMA FMAST OF SCHEMA GRIN1-0. See also LIST RECORDS, LIST SCHEMAS, LIST SUBSCHEMAS.

LIST RECORDS

When you are trying to decide which GRIN subschema to use for your query the LIST RECORDS command can be a great help. You might try to enter LIST RECORDS OF SUBSCHEMA [subschema-name] OF SCHEMA GRIN1-0. The system will tell you which record types are included in the named subschema, and the way the record names are spelled. This will be important when you create your select statement. It is particularly important for COBOL subschemas since COBOL record names can have 32 characters in their name, and many GRIN COBOL record types have long names. See also LIST SCHEMAS, LIST SUBSCHEMAS.

LIST SCHEMAS

The LIST SCHEMAS command is used to display the schema names of all the databases currently on the PRIME. As we have said before GRIN has 3, GRIN1-0, GRIN1-D and GRIN1-X. You, the PUBLIC user will find that all the procedures that are written for your use deal exclusively with GRIN1-0. You may find other schemas listed with the list schemas command, but they are databases created by other PRIME users, and should be considered off limits. See also LIST RECORDS, LIST SUBSCHEMAS.

LIST SUBSCHEMAS

Subschemas are being created on a regular basis as we identify the specific needs of our users. We are attempting to create subschemas which are as small as the specific application requires in order to keep overhead down. Entering LIST SUBSCHEMAS OF SCHEMA GRIN1-0 is an acceptable way of viewing the subschemas available for you to use. To determine if a particular subschema includes the record types you need for your work, use the LIST RECORDS OF SUBSCHEMA [subschema-name] OF SCHEMA GRIN1-0, and try to choose a subschema which is as small as possible. Your query session will run quicker. See also LIST RECORDS, LIST SCHEMAS.

LOGIN

LOGIN is the command you use to "sign on" to the PRIME. When you say LOGIN PUBLIC your abbreviation file and global variable file are activated, you are assigned a working area and are "attached" to it, the GRIN PUBLIC user standard login procedure is activated and you are given the GRIN main menu. Be advised that the backspace and kill characters do not work during login. By this I mean that you cannot make mistakes typing in LOGIN PUBLIC or the login will fail and you will have to try again.

lower

This is a representation of "lower case", as opposed to "UPPER CASE". Lower case will work for all menu prompts and all commands within DATA and INFO, but in INFO you must conform to the "case" shown when selecting a datafile or describing the data elements to be displayed or manipulated in a program or routine. In most cases data element names will be UPPER case if they have been loaded by provided software. If you create your own data files or programs within INFO you may use UPPER or lower case for filenames and data element names as you wish, and your program statements may be UPPER or lower, but you must be consistent when referencing them at a later time. See also UPPER.

MASTER

MASTER is one of the GRIN SUBSCHEMAS. It is written in COBOL, and can be used when the user wishes to query data from all record types within GRIN. It is one of two master subschemas which include all records. By this we mean it is not restricted to a subset of record types, but can be used to access ANY record type. See also SUBSCHEMAS, COBOL.

MISC

The MISC option can be found on the DATA menu. It is there for users who wish to create their own query rather than use the menu options offered. The misc option helps you create your query by doing some of the work for you. MISC uses the subschema MASTER, which is a COBOL master subschema which includes all record types in the database. You can retrieve from any accessible record type using master. MISC also issues the UNLOCK commands for you. As MISC progresses it will prompt you for specifics for your particular query. The procedure contains a select statement of the format: "SELECT [ALL/specific data elements] FROM [record-name] [WHERE condition]". As the select statement is processed you are prompted for the parameters enclosed in the brackets "[...]". The first prompt will ask you to "Enter ALL or specific descriptor names separated by commas". At this point you type in either ALL <cr>, or a list of specific data element names, using the COBOL naming conventions shown when you do a DESCRIBE VIRTUAL RECORD on the "target" record of your query. The second prompt you will see will be, "Enter GRIN Record-name". This will indicate the target record of your query. The target record will be the "lowest" level record that contains data elements you're querying for. The third prompt will be, "Enter WHERE and conditions or <cr>". If you want to submit the query without conditions just hit <cr>. To allow this the WHERE statement is included in what you, the user must enter. To include conditions you enter: WHERE [conditions]. Some examples of conditions are: PLANT-HEIGHT eq '23' and DAYS-TO-MATURITY < '56'. You will need to be familiar with the data elements available for the crop you are querying for. You can use the DES (descriptor) procedure in the DATA menu to discover element names. After your query runs the

results will be displayed at the terminal. Because some elements are quite large, the terminal width is modified to 132 characters during the display. If your terminal cannot support 132 characters you may re-adjust the display width and DISPLAY ONLY the elements of interest. To adjust the width enter: SET TERMINAL WIDTH nnn where nnn is an integer value representing the number of characters per horizontal line on your terminal. See also SELECT, DESCRIBE RECORD, VIRTUAL RECORD, MASTER, TARGET.

NEWS

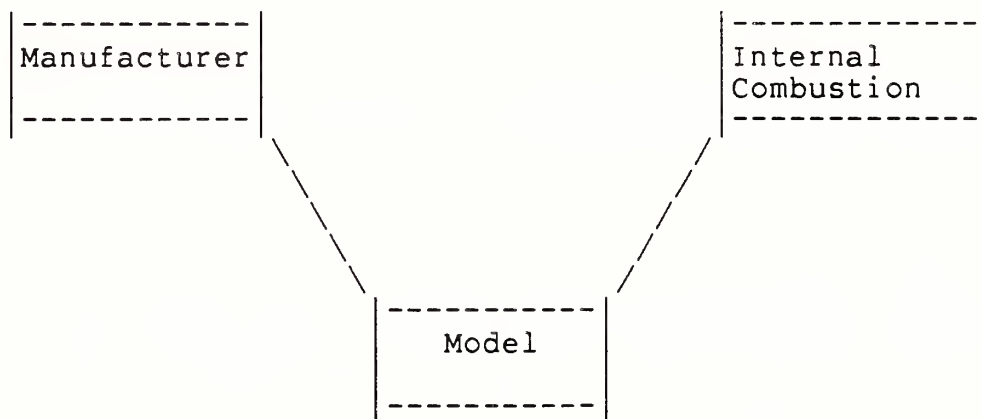
The NEWS option on the GRIN main menu is offered to keep you aware of any system news, developments or happenings of interest.

NPGS

The National Plant Germplasm System (NPGS) "...forms a coordinated network of institutions, agencies, and research units (State, Federal, and private) working cooperatively to introduce, maintain, evaluate, catalog, and distribute plant germplasm. This national system is designed to meet the highly variable research needs of plant scientists in the United States, including minimizing genetic vulnerability of major crops." This definition borrowed from USDA Program Aid number 1188, published, May 1978.

OWNERSHIP

OWNERSHIP is used to define a data relationship. It is said that one record "owns" another if the "owned" record relies on the owner to establish total identity. There is an implied "one to many" relationship between owners and members. An owner can have many members, while each member can have only one owner record. For instance, in the automobile industry an owner record type could be called "Manufacturer" and a member record type could be called "Model". "Chevrolet", "Ford" and "Chrysler" are examples of manufacturer records and "Chevette", "Mustang", "LTD", "Plymouth" and "Dodge" are examples of model records. In this example manufacturer "owns" model, or, said another way, "Ford" "owns" "Mustang" and "LTD". Owners can have multiple members. Members, on the other hand, can have only one owner record PER RECORD TYPE. "Mustang" can only be owned by one manufacturer record, "Ford" in our example, but may also be "owned" by a record type called "Internal combustion" engines. See the illustration below.



Owner-member relationships are presented in a top-down way. Upper level record types generally own lower level record types. In this illustration Model has two owner record types. Both appear "above" it in the drawing. In the GRIN data model you will be able to better follow owner-member relationships since the direction, owner-to-member, is indicated by an arrow. When we say a member can have only one owner we mean that Model can have only one owner record in any one owner record type. "LTD"s owner records are "Ford" in the Manufacturer record type and "Gasoline powered" in the Internal Combustion record type.

PG

PG is the designation for a PROGRAM within INFO's DIR command. It is in the left-most column in the example below:

ENTER COMMAND >DIR

TYPE	NAME	INTERNAL NAME	NO. RECS	LENGTH	EXTERNAL
DF	NAMES	PUL000INF	23	1526	
PG	LOAD.NEW.NAMES	PUL001INF	142	200	

See also DF, IF, RP, SF.

PRIME

PRIME is the registered trademark of Prime Computer, Inc. 500 Old Connecticut Path; Framingham, Massachusetts 01701, and refers to a particular type of mini-computer. There are several models of Prime mini-computers. GRIN resides on a model 750.

PRIMOS

PRIMOS is the registered trademark of Prime Computer, Inc. 500 Old Connecticut Path; Framingham, Massachusetts 01701, and is the operating system on our PRIME mini-computer.

PUBLIC

PUBLIC is used to designate a category of users who use programs and procedures that are not device-dependant. Many features of the GRIN system are written for, and use some special capabilities of certain terminal and printer types. These features support users who maintain actual inventories within GRIN. You, by possession and use of this document, are considered a PUBLIC user.

QUERY

The term query is generally used to refer to the process of submitting a program, or series of commands designed to extract certain data from the database.

QUIT

QUIT is used throughout GRIN. It has different effects in different sections of the system. In INFO, quit means terminate activity WITHIN THIS PARTICULAR DIRECTORY. After entering quit you will be asked again for USER NAME. This allows you to continue processing in another directory, designated by a different user name. To get out of INFO you must then enter STOP <cr>. In DATA, the DBMS/QUERY processor, quit is used to terminate the query session and return you to the main menu.

RECORDS

RECORDS are collections of related data elements. A record about you may include your name, address and telephone number. All elements concern you. A different individual would have a different record. Each record being a collection of related data elements, in this case related to a particular individual. See also LIST RECORDS, DESCRIBE RECORD, VIRTUAL RECORD.

RESELECT

RESELECT is a command within INFO. Once you have indicated which data file you wish to work with, using the SELECT command, you may then refine your selection criteria, or look at a subset of the data file by issuing a RESELECT FOR [condition]. If, for instance, you are working with Phaseolus (Bean) data, and wish to examine those accessions that have a short season, you would first select the bean file, then RESELECT FOR DAYS-TO-MATURITY LESS THAN nn where nn is the number of days. Those records in your bean file that satisfy the reselect condition would then be available for further processing. You may then choose to reselect again for another condition. You may reselect as often as is necessary to isolate the data that conforms to your needs. When you wish to work with the entire file again, you enter ASELECT, or ASEL, and all previous reselects are negated. ASEL is, in effect the same as saying SELECT again. See also SELECT.

RETURN

RETURN is another of several possible designations for the carriage return key on some terminals. Regardless of designation, PRIMOS accepts an octal 215 for sending user input to the computer. See also CARRIAGE RETURN, ENTER, LINE FEED.

RP

RP is the designation for a REPORT within INFO's DIR command. It is in the left-most column in the example below:

ENTER COMMAND >DIR

TYPE NAME	INTERNAL NAME	NO. RECS	LENGTH	EXTERNAL
DF NAMES	PUL000INF	23	1526	
RP REPORT.NEW.NAMES	PUL001INF	142	200	

See also DF, IF, PG, SF.

SAV

SAV is an abbreviation for the DBMS/QUERY SAVE command. SAV is a menu option in DATA. Once you have queried the database and want to load your data into an INFO directory for further work, you SAV the query results. This creates a copy of the query results in a data file at PRIMOS level for further processing. See also SAVE.

SAVE

SAVE is the DBMS/QUERY command to create a copy of a data table in a file outside the DBMS/QUERY package itself, at PRIMOS level, for further processing. See also SAV.

SCHEMAS

SCHEMAS are databases. A schema is the computer code which defines a database. GRIN databases are GRIN1-0, GRIN1-D and GRIN1-X. These are schema names too. The only schema you should be concerned about, and deal with, is GRIN1-0, the GRIN production database. See also SUBSCHEMAS, GRIN1-0.

SELECT

The SELECT statement is used in both DBMS/QUERY (DATA) and INFO. In DBMS/QUERY the select statement outlines what data elements we're querying for, the target or base record of the query and any conditions that must be met for a record to qualify. The three basic forms of the SELECT command are:

```
SELECT ALL FROM [record-name] [WHERE condition]
SELECT FROM [record-name] [WHERE condition]
SELECT [specific data element list] FROM [record-name] [WHERE condition]
```

SELECT is also an INFO command. Before we do any data processing in INFO we must first SELECT a data file. See also BASE, CURRENT, DISPLAY, INFO, ITEMS, MISC, RESELECT.

SF

SF is the designation for a SPECIAL FORM within INFO's DIR command. It is in the left-most column in the example below:

ENTER COMMAND >DIR

TYPE NAME	INTERNAL NAME	NO. RECS	LENGTH	EXTERNAL
DF NAMES	PUL000INF	23	1526	
SF REPORT.NEW.NAMES	PUL001INF	142	200	

See also DF, IF, PG, RP.

STATUS

STATUS is a DBMS/QUERY command. When issued it displays the current status of your session, what terminal defaults are in effect, what tables you're currently using, whether certain features are enabled or disabled, etc.

STOP

STOP is used to exit from an INFO session. Once you have finished working in your INFO directory, and wish to move on you terminate the INFO session in two steps. First enter either QUIT <cr> or STOP <cr>, then enter STOP <cr>. The second STOP will terminate the INFO process and return you to the GRIN main menu.

SUBSCHEMAS

SUBSCHEMAS are, as the same implies, sub-schemas, or parts of a schema. They provide "windows" into the database. Subschemas "include" certain areas, records and sets depending on the subschemas function. In GRIN, if you are interested in viewing information about accessions introduced from a certain country you might use subschema FAC. FAC stands for Fortran ACcession subschema, and includes only the record types necessary for viewing the data mentioned; ACRCD, SPRCD, GNRCD, FMRCd, GEORCD, GEARCD. Using this subschema limits the system overhead which would have been necessary if you had chosen to use one of the larger subschemas, like FMAST for your query. Subschemas can be as large as the database itself, or as small as a single record type. There are many subschemas defined for the GRIN system. Using the LIST SUBSCHEMAS OF SCHEMA GRIN1-0 command in DBMS/QUERY will list them for you. If you then LIST RECORDS OF SUBSCHEMA [subschemaname] OF SCHEMA GRIN1-0 you will see what record types are included in the various subschemas. This process will help you locate

the subschema that best suits your needs. In the long run it will be helpful in that your queries will run more quickly, shortening your session time. The GRIN subschemas are about half FORTRAN and half COBOL. New ones are being created all the time so this is subject to change. At this writing you can tell which are FORTRAN and which are COBOL by their names. Fortran naming conventions allow up to six character names, while COBOL allows 32 character names. If a subschema name contains the word MASTER it will be COBOL, and all the crop-specific subschemas (W6-BEAN) are COBOL. If the subschema name contains the word FMAST it will be FORTRAN. Another way to tell is with the LIST RECORDS command. Record names must also conform to the naming convention, so long record names imply COBOL subschemas. See also LIST SUBSCHEMAS, LIST RECORDS, FAC, FIV, FMAST, MASTER, FORTRAN, COBOL.

TARGET

A TARGET record is the record type indicated by the FROM clause in a DBMS/QUERY execution. SELECT [...] FROM [record-name] WHERE [...]. Record-name is either the "lowest" level record type which contains data elements you are searching for, or a record type which is located in a position which would create the virtual record necessary to include all data elements being searched for. See also BASE, VIRTUAL RECORD.

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UNLOCK

The UNLOCK command is used in the DBMS/QUERY processor. It is used to enter passwords for certain areas and records in the database. Its formats are:

UNLOCK AREAS [specific areas separated by commas] WITH 'NPGS'
UNLOCK RECORDS [specific records separated by commas] WITH 'NPGS'

See Appendix C for a complete list of areas and records within areas. For PUBLIC users both the area and record passwords are NPGS.

UPPER

UPPER is used to indicate UPPER CASE (CAPITAL LETTERS) as opposed to lower case on data entry. In most operations case is insignificant. It is necessary to conform to UPPER or lower convention however when working in INFO. Commands may be entered either in UPPER or lower case, but data element names and file names must be entered exactly as they are shown when the user enters DIR or ITEMS. In other words, as far as INFO is concerned, "SELECT DATA" and "SELECT data" are NOT the same, while "SELECT DATA" and "select DATA" ARE the same. See also DIR, ITEMS.

USE

The USE statement in DBMS/QUERY is used to indicate which schema and subschema you are going to use in your query. Its formats are:

```
USE SUBSCHEMA [subschema-name] OF SCHEMA GRIN1-0
USE SUBSCHEMA [subschema-name]
```

In the first example above you would be expected to include the reference to schema name if you are just entering the query processor and have not yet established "currency". In other words, when you first enter DBMS/QUERY you will be expected to indicate which schema you are going to use, while in subsequent queries, using a different subschema, you may omit the schema name since it is already known to DBMS/QUERY. See also CURRENT, SCHEMAS, SUBSCHEMAS.

USER NAME

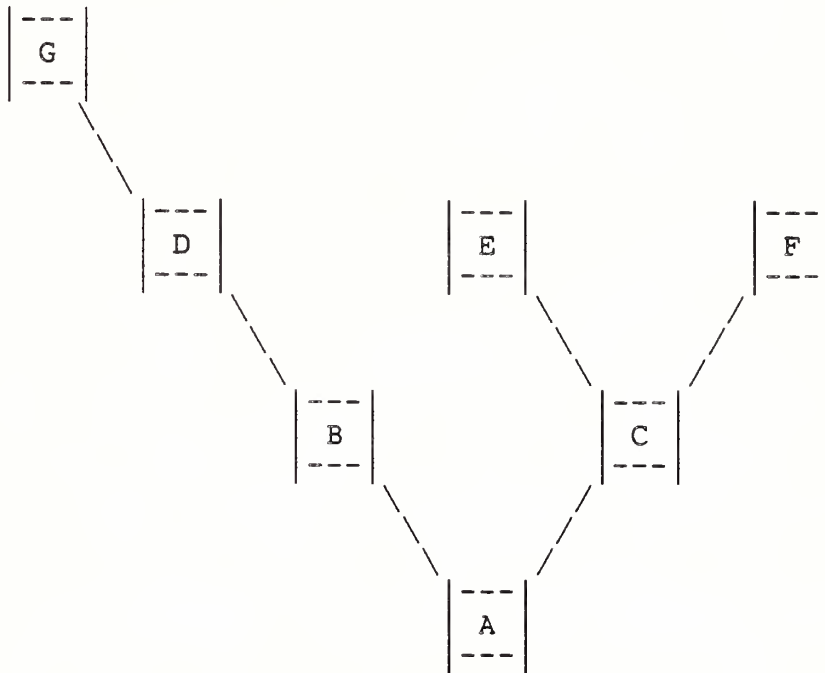
USER NAME is an INFO convention used to indicate what INFO directory you wish to work in. For PUBLIC users the INFO directory will be called PUBLIC. When you first enter INFO the system will automatically assign a user name of *PUBLIC. The "*" indicates to INFO that it should create a new user directory called PUBLIC. Your directory will be empty when it is first created. If, later in your session, you re-enter INFO you will see the system issue a user name of PUBLIC, without the "*". This is because your directory exists and does not need to be created. USER NAME is the first prompt you see when you invoke INFO and the last prompt you see when you leave INFO. We have automated the process for you as you enter INFO, but you must respond yourself on the way out of the processor. The proper response to USER NAME when you wish to exit INFO is STOP. See also INFO, PUBLIC, QUIT.

VIF/VIC

Because of some limitations in the DBMS/QUERY processor we have found it necessary to use the INFO processor for much of our data manipulation. Since DBMS/QUERY and INFO are separate entities on the PRIME, created and maintained by different vendors, it was necessary to develop a utility that would reformat data files SAVED from DBMS/QUERY sessions, to a format suitable to INFO. We have two such utilities, VIF and VIC. VIF stands for Vista-to-Info-Fortran and VIC stands for Vista-to-Info-Cobol. VIF is used to reformat data files saved from GRIN FORTRAN subschemas, and VIC is used to reformat data files saved from GRIN COBOL subschemas. Once you have used the SAV command in DBMS/QUERY to save your query file, you exit DBMS/QUERY by entering QUIT. You are then returned to the GRIN main menu. If you used a Fortran subschema in your query you would then enter VIF and your data file would be reformatted. If you used a Cobol subschema you would enter VIC as your main menu option. After VIF or VIC is completed you are returned to the GRIN main menu and, assuming you then wish to load your data into an INFO working directory, you would enter INFO and once your working directory was created you would load your data file. See also SAV, SAVE.

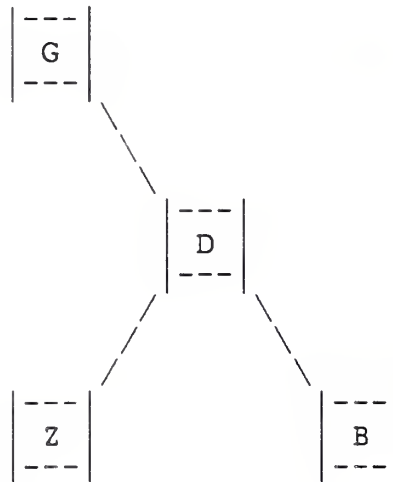
VIRTUAL RECORD

VIRTUAL RECORD is a DBMS/QUERY construct. A virtual record is defined for each record in the database, and a virtual record is used depending on the "target" or "base" record of your query. A virtual record contains all data elements in the base record and all data elements in all records to which there is a single upward path from the base record.



In this illustration we have records A through G arranged in a characteristic way representing a possible data model structure. Virtual records are defined for each record in this example during subschema compilation. A virtual record is used depending on the "base" record in the FROM clause of your SELECT statement. Consider the above example. The virtual record based on record B contains all items of records B, D and G. Similarly, the virtual record based on record C contains all items in records C, E and F. The virtual record based on record F contains only items in record F since F has no "owners". Also, the virtual record based on record A contains all items in all records in the illustration since it is "owned" directly or indirectly by each record shown. If you are querying for elements from records B, D and G you would indicate record B in the FROM clause of your select statement since it is the "lowest" level record which contains data elements you are searching for. As another example, if you are querying for data elements from records B, D, G and E you would indicate record A in your FROM clause since record A is connected to record E via record C. Choosing a base record for your query involves knowing what data elements you're looking for, and where they are stored.

As a second illustration, consider the data structure below:



As before, virtual records are defined for each record in the example. The virtual record for record B contains all items in B, D and G. The virtual record for record Z contains all items in records Z, D and G. There is no way to retrieve elements from both record B and Z in the same select statement, since a query based on record Z must travel "downward" from record D to get to B. In the same way, a query based on record B must violate search rules to get "down" to record Z. To get data from both records you must create two separate selects and use the INFO processor to relate the two resulting files on a common key, presumably contained in record D. See also BASE, TARGET, SELECT, DESCRIBE VIRTUAL RECORD.

VISTA

VISTA is a PRIMOS command which executes the DBMS/QUERY processor. PUBLIC users will enter DATA to the GRIN main menu prompt to execute DBMS/QUERY. VISTA is used in a conversational sense to indicate the query package and has no other meaning for PUBLIC users. See also DBMS/QUERY.

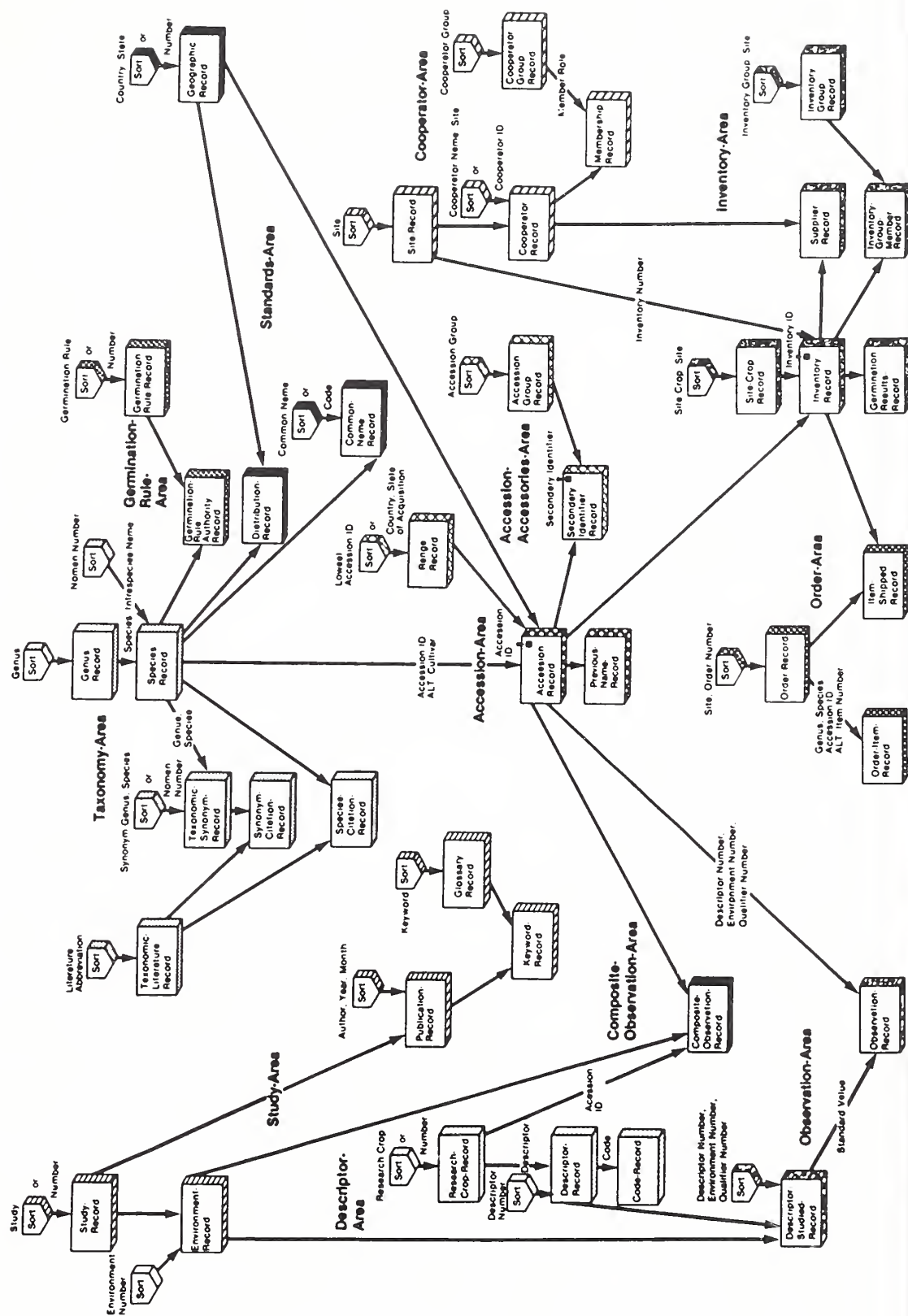
WATS

WATS stands for Wide Area Telephone Service, and is the network used by many organizations who routinely make many long distance phone calls in the normal course of business.

X-ON/X-OFF

X-ON/X-OFF relates to the ability to temporarily halt display of data on the terminal using CONTROL-S, and resuming the display again using CONTROL-Q. Requires full duplex. See also FULL/HALF, CONTROL-S, CONTROL-Q.

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